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MAP
of
THE Soils IN
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AGRICULTURAL SURVEY

OF

GALLOWAY.

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GENERAL VIEW

OF THE

AGRICULTURE

OF

GALLOWAY;

COMPREHENDING TWO COUNTIES, VIZ.

THE STEWARTRY OF KIRKCUDBRIGHT,

AND

WIGTONSHIRE.

WITH OBSERVATIONS ON THE MEANS OF THEIR IMPROVEMENT:

DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE AND INTERNAL IMPROVEMENT.

WITH SEVERAL PLATES.

BY THE

REV. SAMUEL SMITH,

Minister of Borgue.

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N. B. *Letters to the Board may be addressed to* SIR JOHN SINCLAIR, Bart. M. P.

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INTRODUCTION.

At a time when so many county Reports have been laid before the public, it is very natural to suppose that the Survey of one, even of the most fertile, and highly cultivated districts, would not afford much additional information on the subject of Agriculture. A general view, therefore, of the husbandry of Galloway, which certainly has few claims to such distinction, may, it is feared, attract but little notice, even from the class of readers who are most accustomed to peruse publications of the kind. Situated in a remote part of the island, far from the seats of learning and the arts, thinly peopled, and of a soil and climate, not the most propitious to agriculture—barbarous at no distant period in every part of farm management, and still exhibiting the vestiges of former rudeness; it seems fair to conclude, that the history of its agriculture, and rural œconomy, can contain little to gratify curiosity, or afford instruction; and

will, therefore, appear valuable to those only whose connexion with the district, leads them to feel a peculiar solicitude to record its past transactions, or promote its subsequent improvement.

It should, however, be remembered, that a true picture, always possesses claims to attention, whatever the original may be; that the barren mountain, and the fertile valley present a beautiful variety in the scheme of universal nature; and that the account of either may convey instruction. Thus, the description of Lapland, or Siberia, of the Alps, or the Andes, where nature wears her wildest and most barren aspect, forms a narrative equally interesting, perhaps, and useful with that of the plains of Hindostan, or China, where every province is an extended garden.

To detail the means by which wastes may be reclaimed, or moors and mountains, not susceptible of culture, be best adapted to their peculiar uses, is obviously of vast importance to the prosperity of a country that contains many tracts of such lands, and that, in its overflowing capital and unrivalled spirit of enterprize, combines resources, of which no other kingdom can boast. In this view, it is presumed, the Survey of Galloway will furnish some useful facts and illustrations.

If it be admitted, that views of agriculture and rural œconomy are useful, which show, not what ought

to

to be adopted, but what ought to be avoided—which mark the origin of improvements—trace their progress through subsequent stages, and point out the causes by which they have been retarded or accelerated—an ample field is here presented, and materials are not wanting, to render the account both interesting and useful.

As it would, however, convey a very mistaken notion of Galloway, to describe it as generally barren, so it would be no less under-rating its husbandry, to assert that it is only emerging from barbarity. In many parts of it, the soils are excellent, and in some points of management, (as will afterwards be shown) it need not decline a comparison with the most improved districts of the kingdom. Both, indeed, exhibit a striking contrast, between what is good and bad in the extreme; but with this difference, that whilst better management is rapidly pervading every corner of the district; the country, in many places, can never, perhaps, admit of amelioration. To a striking difference in point of management, must be ascribed the brief notice which some articles in the Survey have received, as well as the examination of others, extended, perhaps, much beyond the limits to which their relative importance might seem to entitle them.

In a work which comprises so many objects, and which has been executed amidst daily interruptions, the Reporter is sensible, that inaccuracy of composition,

and faults of still greater magnitude, will sometimes occur. He can, however, say with truth, that he has bestowed much pains to obtain information from the most authentic sources—that he has considered fidelity in the narrative paramount to every other excellence—and though led, from the nature of the undertaking, to blame oftener than to praise, that he has not violated truth, either from a desire to please, or from a fear of offending—that, in the composition, he has studied to be brief, simple, and perspicuous, considering every ornament meretricious, which would be incompatible with the plainest and most popular stile. The performance, therefore, he is sensible, will not bear to be tried by the strict rules of criticism. With more time and leisure, the work would have been executed better; but in no length of time, without assistance from others, would it have been executed so well. To those who have thus kindly lent their aid, he gratefully acknowledges his obligations. For much valuable information on a variety of important points, he has been indebted to some of the most respectable proprietors in both counties, who have formed clear and comprehensive ideas on the subjects of agriculture and rural œconomy—displayed superior skill in the management of their own estates, and testified a laudable desire to promote every plan connected with the improvement of the district, or the prosperity of their country—To several very intelligent farmers, he has also been indebted for much practical information; and to the clergy in general, for their friendly

attention

attention to his enquiries, and their desire to promote the success of his undertaking.

To literary fame, his own talents, not less than the nature of the work forbid him to aspire; he will not, however, regret the labour bestowed, if it shall be the means of assisting the enlightened, and patriotic President of the Board of Agriculture, in his great and comprehensive plan of forming a complete Agricultural Chart of the whole island—thus, bringing at once into view, all the useful knowledge of the kingdom respecting rural affairs, for the important end of disseminating it again, and making the science as universal as the labours of the husbandman. Perhaps, too, he may be allowed to indulge the hope, that by pointing out, and exposing existing abuses, aud by suggesting better modes of management, his work may tend in some degree to promote the improvement of the district.

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AGRICULTURAL SURVEY

OF

GALLOWAY;

COMPREHENDING THE

STEWARTRY OF KIRKCUDBRIGHT,

AND THE

SHIRE OF WIGTON.

CHAP. I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. I.—SITUATION AND EXTENT.

GALLOWAY forms the southern maritime district of Scotland, and occupies its south-west corner, lying between 54° 44° and 55° 24° north latitude, and between 3° 31° and 5° 8½° west longitude. It is bounded on the south by the Solway frith and the Irish sea; on the west by the narrow channel which separates Scotland from Ireland; it is divided from Ayrshire, on the north, by a range of mountains; and from Dumfries-shire, on the east, by the continuation of these mountains; by streams which fall into the Nith, and by the Nith itself, which is discharged into the Solway frith on its south-

east corner. The name was formerly applied to an independent principality, which extended over a great part of Ayr-shire and Dumfries-shire, but is now confined to two counties, the Stewartry of Kirkcudbright and the Shire of Wigton. These are divided by the river Cree; the former occupies the eastern, the latter the western part of the district.

The greatest length of Galloway, from east to west, is 63½ miles: its greatest breadth, from north to south, is 43 miles.

The Stewartry of Kirkcudbright, according to a survey made by Mr Ainslie, contains 882.57 square miles, or 449,313 Scotch acres. The Shire of Wigton, 485.5 square miles, or 244,498 Scotch acres.

The figure of Galloway is very irregular. The sea, which forms the boundary along a great proportion of its circumference, indents it in many places with bays, some of which reach far up the country, and extend the benefits of navigation to a large part of the district.

Bays, Harbours.

The coast, though in general rocky, and dangerous to navigation, is well provided with harbours, at no great distance from one another. The bays of Kirkcudbright and Lochryan are excelled by few in the island. There are also a great number of inferior harbours, creeks and landing places, which, though not adapted to vessels of a large size, are very convenient for the coasting trade of the country, consisting chiefly of coal, lime, grain,

grain, &c. which is usually carried on in ships of small burden.

Many of these, it is believed, might be improved, and additional landing places formed, at no great expence, and with very material benefit to the inhabitants of the neighbouring districts. Any improvements which have been made are chiefly at Port-Patrick, the expences of which were defrayed by government: at Port-William in the bay of Glenluce: and at Drummore on the opposite side of this bay, where a pier is built, which will render this a very safe and convenient harbour. This work, though pretty expensive, we are informed has been executed by an enterprizing tenant and corn-dealer in that neighbourhood.

SECT. II.—DIVISIONS.

The Shire of Wigton is divided into three districts, called the Rhyns (Rinns), the Moors and the Machers. The boundaries of these are not very accurately defined. The Rhyns lies to the west, and consists principally of of the singular peninsula lying west of Lochryan and the bay of Glenluce. The term signifies points or promontories, and is very appropriate to the figure and appearance of the district. It includes the parishes of Kirkmaiden, Stonykirk, Port-Patrick, Leswalt, Kirkcolm and a small part of the Inch. This district is connected with the rest of Galloway by an isthmus, about eight miles in breadth, which had once been evidently over-

flowed by the sea; so that at some former period, though probably very remote, the Rhyns must have formed an island. It contains about 116 square miles.

The Machers is a large promontory, lying betwixt Wigton bay and the bay of Glenluce, on the south-east extremity of Wigton-shire. The name is Celtic, and signifies *flat* or *low country*. It includes the parishes of Kirkinner, Sorby, Whithorn, Glasserton, and great part of Mochrum. This district comprehends about 64 square miles.

The rest of Wigtonshire is termed the *Moors;* though the whole of it is not, in reality, a moor country. The Moors extend to about 305 square miles.

In the Stewartry there are no sub-divisions, except that the four inland and most northerly parishes, Carsefairn, Dalry, Kells and Balmaclellan, are usually termed the district of Glenkens. There is, however, a very marked natural division; one part of it being almost entirely a highland district; the other, generally, a champaign country. If a straight line be drawn from about the centre of Irongray parish to the Gatehouse of Fleet, it will, with a few deviations, follow this natural division. That part of the county which lies west and north of this line, and contains about two-thirds of its surface, is generally mountainous; the straths along the rivers, with a few cultivated spots, found chiefly among the lower mountains, forming altogether a very inconsiderable proportion, perhaps not one-tenth of the whole. The country to the south-east of that line is mostly cultivated; with the exception, however, of a pretty large mountain

mountain* near the river Nith, and a narrow track of rising ground, which stretches from it, along the shore to within a few miles of Kirkcudbright. These, with hills of different dimensions, which lie detached, occupy not more than one-fourth of this division.

The Stewartry is divided into 28, and the Shire into 17 parishes.

SECT. III.—CLIMATE.

THE climate of Galloway, like that of all the western coast of Scotland, is much inclined to moisture. The south-westerly winds, which prevail during great part of the year, generally bring with them rains. The country is seldom hurt by drought; sometimes, however, in the months of April, May, and the beginning of June, easterly winds prevail, and occasion what is termed the *Beltaen*† drought, so much dreaded of old all over Scotland. Occasionally very dry summers occur, when the fine thin land, especially on the shores and banks of rivers, becomes scorched; and to form an opinion from the complaints of farmers, in such seasons, one would suppose, that drought is more to be dreaded here than in the parched regions of the torrid zone. It commonly happens, however, that in these very seasons the cattle are in better condition, and even the crops more produc-

* Criffel.

† Provincial term for the last day of April, O. S.

tive than in the wet seasons, to which they seem to be so much attached. From its varied surface in respect of mountainous and level country, it often happens that one part is suffering from drought, whilst another is steeped with rain.

The moisture, generally prevalent, is, in summer, very favourable to the growth of corn and grass; but frequently very troublesome in harvest, which is here a period of much anxiety; requiring the greatest vigilance, and most unwearied exertions on the part of the farmer. When proper attention, however, is bestowed, great losses are seldom sustained; and some who have farmed on an extensive scale, have not lost a single sheaf in the course of many years.

The difference of harvest weather on the eastern and on the western coast appears to have been much exaggerated. Some farmers who have come from the east coast, to settle in Galloway, have asserted, that the difference, if any, is in favour of Galloway. The received opinion, however, is, that rains are much more prevalent here than on the opposite coast; and this is assigned as the reason why crops of wheat, even in soils adapted for it, are for the most part inferior. Another reason assigned, and perhaps with more truth, is the want of sun in the month of July, and the beginning of August, when the ears are filling: and when this is the case, as frequently happens, it has been observed that the ears are always light. In the western part of the district, particularly in the Rhyns, rains are most prevalent, which may be easily accounted for from their vicinity to the Atlantic ocean and the Irish sea.

From

From the prevalence of westerly winds, the winters are much milder than on the eastern coasts. The vegetation continues later in the fall of the year, and commences earlier in spring. It seldom occurs that frosts continue with severity, or that snow lies long in the lower district. It is generally calculated, that in December and January the industrious farmer can plow on an average four days per week, and in November and February five. The seasons, however, are remarkably diversified. Sometimes the frost is as intense almost on the very shore, as in the higher district; and the fields remain white with snow for weeks or months together. —But in other seasons the low lands are covered with verdure during the whole winter, and the plow is never stopped, whilst the mountainous district suffers from severe storms; the grounds are bound up with frost, and many of the starving emaciated flocks perish before the approach of spring. When piercing easterly winds prevail in the spring months, vegetation is often less in April and May than it had been in February; and the stock then suffers more than it had done during the whole course of the winter. These, however, are rare occurrences.

The commencement of seed time varies from the 1st to the 20th of March, according to the season: its conclusion from the 1st to the 15th of May. Harvest sometimes commences on the earliest lands at the beginning of August, but more frequently from the middle to the end of it. There is usually a month of difference betwixt the earliest and latest farms; so that some farmers have often finished before others have begun.

Harvest commonly lasts from four to six weeks. The season is extremely unfavourable if the crop is not gathered every where (except from the field of the sluggard) before the end of October. Sown grasses begin to be cut about the end of June, and bog meadows near the end of July. Both formerly *were*, and the latter still *is* delayed too long, by which means the hay is often not brought into the yard till after the harvest.

The climate of Galloway, though varying extremely in respect of temperature, may every where be reckoned healthy. Its salubrity has doubtless been very much promoted by the improvements of the country. To this cause it may be ascribed that intermittent fevers, once very prevalent, have not been known for thirty years. Fevers of a different kind occur but seldom, and other acute or chronic diseases are perhaps less frequent, than in almost any other district of the kingdom.

SECT. IV.—SOIL AND SURFACE.

THE soil and surface of Galloway are so exceedingly diversified, that it is scarcely possible, by any description, to convey a very clear and distinct idea of them. The aspect of the country, which is singular, ought first to be noticed. Hills rise almost every where immediately from the shore to the height of 100 or 200 feet, and sometimes much more. The interior country continues for several miles nearly at the same elevation, though of a very unequal surface, and intersected with

immumerable

innumerable vallies, furrowed out by rivers, or smaller streams. The country is thus divided into a continual succession of hills more or less abrupt. On these the land is for the most part capable of tillage; but in few places does it present a smooth and uniform arable surface. It is one of the most remarkable peculiarities of Galloway, that the surface of the hills is generally broken by abrupt protuberances, steep banks and rocky knolls, diversified into every possible variety of shape. This general character applies both to the Shire and Stewartry: there are, however, some striking differences between them. The Shire has no considerable rivers, nor mountains: and though studded with innumerable hills, no county in Scotland is supposed to have less elevation above the level of the sea. The Stewartry, widely different, often swells into mountains of large dimensions; and though in the middle of the district, the acclivity is so gentle, that the river Dee at thirty miles distance from the shore, has only a rise of 150 feet above the level of the sea; yet beyond this distance the country is in general much more elevated, and the range of mountains which divides it from Ayrshire is not much inferior in height to any in the south of Scotland. This extensive range stretches along the whole northern boundary, verges in both extremities towards the sea, and forming a vast semicircle, embraces nearly one half of the county. Viewed from the lofty summits of these mountains, the rest of the county appears as a great plain; diversified only by a variety of shades, according to the size, distance, or colour, of the inferior mountains.

The mountains already mentioned on the southern extremity, though greatly inferior to the northern range, and seemingly insignificant when viewed from the latter; yet

yet are in reality far from being inconsiderable, and lifting their craggy cliffs, and dark summits immediately above the margin of the sea, they form scenery highly picturesque, and sometimes approaching to the sublime.

The Shire, unlike the Stewartry, contains no large mountains. In other respects, however, there is a great similarity betwixt the two counties.

This general outline appears to be not improper, previous to the giving a more detailed account of the soils of Galloway. The district may conveniently be considered under two heads: 1st, What is already, or may be rendered arable. 2dly, What is solely adapted for pasturage.

From the general aspect of the country, a stranger would be led to suppose, that the quantity of arable land, even in what is termed the arable district, is far from being considerable; and that much of this too is of no great value. Such conclusions, however, would be extremely erroneous. The flat intervals among the knolls are foreshortened or hid; the knolls themselves, though of no great breadth, fill the eye, and seem to occupy most of the surface: their tops and sloping sides, often covered with furze and brush-wood, seem to be unfit for cultivation, but are usually of a very kindly soil, and of sufficient depth to receive the plough. In an extremely broken field, of which apparently not more than one half is arable, the proportion will often amount to no less than 4-5ths.

The knolls and banks, however, which occur so frequently, and the rocky protuberances which interrupt the

the surface of the arable ground, present great obstructions to tillage. The soil too, which is kindly and productive when cropped with moderation, suffers extremely from overcropping, and the injudicious application of calcareous manures; and the injury which it thus receives cannot be easily repaired.

By far the greatest part of the soil of Galloway is of a hazel colour; and of that species which is sometimes termed a dry loam, though it often inclines to a gravelly nature. The bed of schistus on which it lies, is frequently so near the surface, that the plough runs upon it; and where the rock is soft, by its attrition, probably adds a little to the depth of the soil. Even on such dry hard lands this is commonly somewhat more than the depth of a furrow: and it appears to retain the fertilizing qualities of dung better than almost any other soil. Hence the old croft lands formed upon it are of superior richness; and even outfield lands left long in pasture, with calcareous manures spread upon them, often acquire the fertility of the finest crofts.

This soil, notwithwithstanding its great fertility, is spoken of as light, and it certainly is so in comparison of the rich lands of the Lothians; but it would not be considered as such by any person acquainted with sandy districts, as there is very little of it which has not sufficient consistency to raise wheat, when properly managed; though it seems better adapted for barley and oats, with the proper interchanges of turnip, and other green crops.

Though Galloway, every where is hilly, it must not be supposed that the whole country is of the broken and

and rugged surface above-mentioned. Some parts of it contain very considerable tracts of smooth unbroken land; of a gravelly, and sometimes of a clayey bottom. Much of it too is composed of smooth rounded hills, lying on a bottom of *till* * ; sometimes of an absorbent, but more frequently of a retentive nature. When the last is the case, they are commonly, and sometimes deservedly, execrated by the farmers. If a thin covering of mossy soil lies on an impenetrable bottom, it is naturally unproductive; and all attempts to render it fertile generally prove abortive. But the same bad character is often extended to lands of a strong soil, and of abundant depth, which, were they sufficiently drained, and well cultivated, would be highly productive. The expence of draining them, however, is so great, that hitherto it has been very much neglected. If left to the tenant, it will never be done effectually; and without this, all the expences of labour and manure he can employ, will be insufficient to render them permanently good. Soils of this species are commonly to be met with in smooth conical hills, or extended ridges termed *Drums*.

The above, forms the general character of the arable lands of Galloway. The exceptions are comprised in

* *Till* is a provincial word of which the meaning is not always perfectly definite. It is sometimes used to express a sort of hard impenetrable clay, mixed with fragments of stone or gravel. This, however, is only one species of it, for the name is applied likewise to subsoils of an absorbent nature, which if exposed by culture to the sun and atmosphere would turn into excellent dry loams. It is often used to denote a retentive subsoil abounding with iron ore. In general, it may be taken for any subsoil, consisting of a mixture of clay and sand or stones, devoid of the vegetable matter which gives a soil the friability and openness requisite for vegetation.

two

two districts of sandy soil. A considerable portion of clayey, or more properly, *alluvial* soil, on some places of the shore, and along the banks of rivers, with detached spots of a dark coloured strong loam.

A short topographical account is subjoined, to convey clear ideas on the subject.

In the neighbourhood of Dumfries is a tract, comprehending most of the parish of Tirregles, and part of Troquier and Irongray, where the soil is sandy, intermixed with loam; the surface being smooth, and the ground level. This possesses the facilities of cultivation and improvement beyond any other parts of the country.

Along the banks of the Nith, near its mouth, there is no inconsiderable portion of merse land. For several miles below Dumfries, the tract is narrow, and interspersed with large *flowes*; but in the lower extremity of New-abbey and Kirkbean, it expands to much greater breadth; comprehending 5000 or 6000 acres, either of merse land, or of a rich loam, partly on a gravelly bottom, and partly on a bottom of limestone. The greatest part of this appears to have been formed by the overflowing of the river, and reflux of the tide. The soil accordingly exhibits a curious mixture of clay, peat, sand, and shells, lying sometimes horizontally in different strata, but commonly blended together in various proportions. The sea here appears to be gradually receding from the land, and as it retires, forming successively, year after year, little embankments of sand, behind which it deposits its muddy contents on the level shore. Thus, without any assistance from art,

art, the channel of the frith is slowly contracting. There cannot be a doubt, that by a judicious embankment, much land might here be acquired; and at an expence by no means proportioned to its value. Much of this merse land being still overflowed, in very high tides, has not been brought into tillage*.

From the Nith district, above described, to the Dee, there is an extensive tract of land, comprising the parishes of Lochrutten, Kirkguuzeon, Orr, part of Kirkpatrick and Colvend, Crossmichael, Kilton, Buittle and Rerwick, which is hilly indeed, but of a smooth unbroken surface; of a strong soil, but often retentive subsoil. The greater part of this is peculiarly adapted for tillage, and becomes less valuable when left long in pasture.

The remaining part of the arable district, possesses, in a much greater degree, all the remarkable peculiarities of the Galloway soils. Broken and abrupt in the extreme; with nearly the same proportion of arable as the above; but much less adapted for tillage, though excelled nowhere, and seldom equalled for the kindly and nutritive quality of its pastures. This account particularly applies to the parishes of Kirkcudbright, Bergue, Twynholm and Tongland. The Milton Croft, in the parish of Kirkcudbright, a farm of one hundred and thirty acres, is esteemed the finest pasture land in Galloway. Though there are some other farms, and very many spots of smaller extent, which under the

* By the spirited exertions of one Farmer, about 400 acres have lately been embanked, and brought into culture. Patronized by a generous landlord, it is presumed the greater part of his farm, consisting of 600 acres, will soon be brought into a state of improved cultivation.

same

same good management, would not be much inferior in the luxuriance of their pastures.

In the Shire of Galloway, the *Machers* so much resembles the district just mentioned, as not to require a separate description. It is mostly arable; but chiefly distinguished for the excellence of its pastures; and in this respect it would be very difficult to determine to which of the two the superiority belongs. The lands of the Earl of Galloway, farmed by himself, the estates of Physgill, Tannerghie and Glasserton, are well known from the fine bullocks they send annually to the Norfolk markets.

On the banks of the Cree, and along the head of Wigton bay, there is a pretty extensive tract of alluvial soil, evidently formed of substances carried down by the river and thrown back, mixed with clay, shells, and sand, by the reflux of the tide. The carse of Baldoon, which forms the largest part of it, (being about 3000 acres,) has all the qualities of the merse already described, and is esteemed superior for tillage to any in the county. The valley along the Cree varies from two to four miles in breadth: and the river has evidently shifted its bed from one side of it to the other. Along the banks of the river the soil is of a strong clay; behind this is a large tract of moss; and betwixt this and the rising grounds is another large tract similar in quality to the first. The moss accumulating for a series of ages by its decayed vegetables, and heaved up by subterraneous waters, is considerably more elevated than the clayey lands on each side of it. On the bottom of the river large oak trees are found, as the river shifts its bed, which had been buried to the depth of twenty-

five

five or thirty feet; for such is the height of the banks of the river above its channel.

This singular appearance indicates that the whole valley had once been a large forest. The river, as it changed its course, would undermine the trees, successively, from one side of the plain to the other; and being assisted by the flowing tide, would again cover them with alluvial soil, to this extraordinary depth, where for ages they have remained concealed from human view. The rising grounds to the west of the river, through the parish of Wigton, and the lower part of Penningham are for the most part arable; and though hilly, are of a smooth surface, strong soil, and absorbent subsoil, which is rarely the case with hills of such an appearance in the Stewartry.

In the valley, which extends from the bay of Luce, to Lochryan, eight or nine miles in length, and varying from three to six miles in breadth, the soil consists chiefly of a deposition of sea sand; interspersed with considerable tracts of flow-moss. These are seldom of much depth; and, resting upon a sandy bottom, often admit of being easily brought into tillage. The greatest part of this large plain affords evident indications of having been overflowed by the sea. A stripe of sandy soil occurs also on the west side of the bay of Lochryan.

The Rhinns, with the exception of the greatest part of the parish of Port-Patrick, is, in general, a very arable district. The hills, along the whole of this peninsula, rise to a considerable height; and seem, as if intended by nature, to form a strong barrier against the westerly

westerly winds. From a retentive subsoil, they are often also spungy and wet, particularly on the western side of that part of the peninsula which extends along the bay of Luce. They possess all the other characters of the strong soils which have already been described. On the other extremity of the peninsula, even where the hills rise to the same height, and have a smoother surface, the subsoil is frequently absorbent, consequently they are still better adapted for tillage.

It deserves to be mentioned, that through the whole of the arable district, both in the Shire and Stewartry, bogs and mosses frequently occur; though these are often of such small extent, as to detract nothing from the value of the lands.

The moors and mountainous tracts of Galloway require a separate description.

It is proper to remark that, as in the arable district there are large portions of coarse land which will never be brought into cultivation; so in the district termed moors, much land occurs well adapted for tillage, and not inferior in value to that which has already been described. Along the banks of the rivers, on the sloping sides of hills, and in vallies among the mountains—around farm-houses, and on the margins of streams and rivulets, fertile spots present themselves—rich meadows—luxuriant pastures, and arable lands of considerable extent, and by no means unproductive. From the progress of improvement, and more general use of calcarious manures, the extent of such cultivated lands has been greatly en-

 larged

larged in many places of this district. But, with the above exceptions, the general character of the moorlands, both in the Shire and Stewartry, is barrenness in the extreme. Extensive regions appear covered entirely with a soil of peat-earth; large and deep flowes, which chill the air with their humid exhalations; and where, even during their short summers, there is little vegetation. These flowes, in the Shire, are extended, with little interruption, to the length of eight or ten miles. They are perfectly useless for pasture; and are dangerous to the flocks; some of which frequently wander into them, and are drowned. Tracts frequently occur where only a thin stratum of peat-soil is deposited among rocks; and where the large rocks or detached fragments of granite * cover the greatest part, nay, in some places almost the whole of their surface. These regions may support some wandering goats, or a few of the most active breed of sheep; but are at present of very little value, and appear to be condemned by nature to remain in perpetual sterility.

When compared with the Stewartry, the Shire may be considered as a level country. Though its hills are numerous, none of them are supposed to rise more than 1000, or 1,100 feet above the level of the sea; and their bases are commonly of small dimension. To these the mountains of the Stewartry, especially the range which extends along its northern boundary, form a very

* There are three districts of granite, which occupy nearly one-fourth of the surface of the Stewartry. The first extends from Loch Ken to Pilnure water. The second from Loch Dee to Loch Doon. The third from Criffel to Dalbeaty on the river Orr. They are all, and in particular the two first, remarkable for extreme barrenness.

striking

striking contrast. With large bases, lofty summits, and small intervals of level ground, they give it quite the aspect of a highland country; accompanied with all the wildness and bleakness, and diversified by the picturesque and romantic scenery which so generally belongs to such countries in the northern parts of Europe.

Many of these high mountains are not, however, the least fertile. The climate is indeed extremely unfavourable; but though vegetation ceases early in autumn, and recommences late in spring; in summer their smooth and sloping sides are covered with a beautiful verdure. The intermixture of wet and dry soils which they commonly possess, is believed to enhance their value for pasturage. In summer the flocks often delight to climb to their very summits. These, however, are only covered with a thin stratum of mossy soil, yielding grass of so poor a quality, that the sheep, though wonderfully attached to it, would soon perish by emaciation.

In some of these mountains, near their summits, there are vast shelving precipices, inaccessible to the most adventurous race of quadrupeds. On these craggy cliffs the eagle builds her nest, and is secured from the attacks of the shepherd; whilst far below, among the fragments of the fallen rocks, the fox finds a place of retreat, from which the huntsman's dogs can seldom unkennel him.

Many of the detached mountains might also merit a particular description, if this article had not already been extended to too great a length.

One (Criffel *) which rises immediately from the shore, is stated to be 1895 feet above the level of the sea. This does not appear to be nearly so high as some of the northern mountains, whose heights have not however been accurately ascertained. Considerable tracts of land in both counties lying between the *arable* and *moor* districts, partake so much of the characters of both, that it would be difficult to determine to which of the two they ought to be referred.

SECT. V.—MINERALS.

THE subsoil of a country, whether it consists of rock, gravel, or sand, is of no small importance to its cultivators; for it is this which generally determines the nature of the soil on its surface; nor is it extraordinary that this should be the case, more especially where rock is the basis, for the soil must be formed of the rock reduced by the operations of nature to a minutely divided state.

The rock which is most prevalent through Galloway consists of a set of strata of the primary or Alpine class, to which Dr Hutton gives the general name of schistus †. It consists of a mixture of strata of very dissimilar

* Situate near the mouth of the river Nith. Measured by the late Mr M'Cartney, land-surveyor.

† Under this name he includes not only the proper schistus, the schiefer of the Germans, called by English miners shiver, and in Galloway

dissimilar substances. Some are of a hard compact grain (called in the county whinstone) of a blue or greyish brown colour, for the most part breaking irregularly; but often splitting into parallel slices of which coarse slates have been made.

The beds of this stone are of various thickness, from half-an-inch to many feet. It is interspersed in all different proportions with strata of a soft shivering argillaceous stone, which easily yields to the weather, and is called in the country *slate-band*. The strata of these two substances lie in all different directions, from absolutely vertical, to nearly horizontal; though, generally, they are not far from perpendicular. They are also frequently contorted in a singular manner. These strata occupying a large part of the district, are sometimes interspersed with veins or dykes of porphyry. They run very uniformly in a direction from E. N. E. to W. S. W. The mountainous part of the Stewartry consists, in some places, as has been mentioned, entirely of granite, to the extent of many miles. This, too, like the porphyry runs sometimes in veins among the strata of schistus.

These primary strata occupy by far the greatest part of the country. In some corners the secondary strata appear. The district in the neighbourhood of Dumfries lies on sandstone. In Kirkbean is limestone, with

Galloway slate-band; but also the hard compact strata, called by the Germans wacka, or graw-wacka, which is perfectly similar to the blue whinstone of Galloway. I here use the word whin in the acceptation of the country, and not in the restricted sense used by Dr Hutton, who confines it to the veins of *Trapp*.

some appearances of coal, and the strata which accompany it. These, intermixed with sandstone, sometimes of a large grain, and apparently formed of fragmented granite, and sometimes with plumb-pudding stone, appear in various spots along the shores of Colvend and Rerwick; but they nowhere extend far into the country. A quarry of this is wrought in Colvend, of which mill stones are made.

The greatest part of the Shire lies on primary strata; but in the north part of the Rhyns sandstone occurs.

There is another part of the mineral basis, of a very different class from those already mentioned, which remains to be described, viz. the hills of gravel and *till*; whose round and smooth surface forms such a contrast to the roughness of the rest of the country. These hills are evidently formed by water. When they consist chiefly of gravel, they are not so remarkable; but when one of the *tilly* kind is opened, it presents a curious spectacle to an attentive observer; the general mass of *till* being confusedly interspersed with blocks of stone, some rounded and some angular, of all sizes up to the most enormous blocks. Among them are frequently found blocks of granite, though perhaps at ten or twelve miles distance from the granite mountains. These plainly indicate traces of those vast and impetuous torrents and deluges of water, of which there are obvious marks in many other countries.

The description of the mineral nature of the country, affords an easy explanation of the appearances both of its soil and surface. The rugged appearance formerly described is beyond a doubt occasioned by the unequal

hardness of the rock. The slate band and softer substances being worn away by the gradual action of the weather, which the hardness of the whin, porphyry. &c. has withstood. These more durable substances remain projecting irregularly above the general mass of the rock. The knolls and protuberances again are less common, or at least have much less elevation, where the rock is in very great proportion slate-band: the small propor- of whin not having had strength to stand up far above the rest. Where the rock is chiefly hard whinstone or granite, the whole mass has withstood the ravages of time; and the surface rises into high rocky hills and mountains. Granite being the hardest of all, this seems evidently to be the cause why it is almost universally connected with the highest mountains.

The soil too evidently takes its character from the same causes. That which lies on granite is for the most part exceedingly barren. The next in badness is that which lies on schistus hills, entirely, or principally whin. The degree of fertility of the schistus country seems very much to follow the proportion of slate-band in the rock below it. The hills of gravel and *till* are covered with a soil analogous to the nature of the mass of the hills themselves. The sandstone country near Dumfries is covered by a sandy soil; and the clay country of Kirkbean lies on the limestone and coal strata which contain a great proportion of clayey substances.

From the rocky nature of the country it is almost everywhere supplied with abundance of stones for buildings and for fences: but except in Kirkbean, no

limestone has been wrought; such as may be found among the Alpine strata, being too poor to be of use.

Quarries of coarse slate have been found occasionally in different places of the district. Slates of better quality have been found lately near Newton Stewart, and in the Rhinns not far from the Mull of Galloway.

The search for coals in any of the secondary strata has hitherto been unsuccessful*. Lead mines were wrought in Minnigaff for many years; the produce of which was very considerable; but for some time past they have been discontinued. The vein of lead which probably connects with the mines of Minnigaff, has lately been discovered in the parish of Anwoth *. It is said to be of a very rich ore; and from the report of the miners, the prospects are encouraging.

A vein of iron was wrought some time ago near Auchencairn, in Rerwick: and the ore of a fine rich kernel (hematites) was exported to Carron or Whitehaven. This, however, was discontinued from the difficulty of smelting. Many of the mountains of Galloway abound with iron ore; but from the want of coals and scarcity of wood, it is of no value, and will be suffered always to remain in the bowels of the earth.

* Since the above was written, the most promising indications of coal have appeared on the estate of Mr Craik of Arbigland, at about half a mile's distance from the sea. The pit is sunk to the depth of 20 feet. At the depth of 16 feet a seam is found 14 inches thick. When followed to the east half a yard, the seam increases to the thickness of 23 inches, and the coal appears to be of a very good quality. The miners are now boring, and at the depth of 20 feet have found a stratum of white *free* (sand) stone. Oct. 10th, 1809.

SECT.

SECT. VI.—RIVERS, &c.

THE rivers most worthy of notice in Galloway, are, 1st, The Nith, which separates it from Dumfries-shire, running along its northeast corner for eight or nine miles, before it is discharged into the Solway Frith. At Laghall, about five miles from the sea, is a commodious harbour on the south-west side of the river.

2d, The Orr (Urr). This, though an inconsiderable river, is navigable five or six miles, for vessels of small burthen, which export grain, and supply the country with coal, lime, slate, &c. The banks of the Orr are adorned with a few gentlemens' seats, and some beautiful plantations.

3d, The Dee. This is the largest river in Galloway. Two of its principal streams, the Ken and the Deugh, take their rise on the borders of Ayr-shire; and, after a rapid circuitous course of about twenty miles, unite, and form a pretty large river, which continuing its rapid current for many miles further, and forming some deep glens and beautiful cascades, enters at length into a beautiful country, and expands into a fine lake, seven or eight miles in length, and in some places nearly a mile in breadth. Romantically situated, at the head of this lake stands the castle of Kenmore. The rich fertile holms of Ken, on the one hand, are strikingly contrasted on the other, with the dark high hill of Lauran, rising almost perpendicular over the lake. The paucity of woods detracts, however, from the beauty of the scenery.

The

The Dee falls into this lake, and gives its name to the river. After receiving a few more tributary streams, and meandring slowly through a fertile country, it falls into the Solway Frith five miles below Kirkcudbright, having divided the Stewartry nearly into two equal parts, and run a course of about fifty miles.

From Tongland, where it becomes navigable, to the mouth of the river, (a distance of seven or eight miles,) nature and art have combined to render the scenery delightful. The beautiful windings of the river—the hills finely diversified, and rising at different distances above its fertile banks—the plantations of the Earl of Selkirk, which extend nearly from Tongland to the sea on both sides of the river, and are laid out with the most exquisite taste—the town of Kirkcudbright—St Mary's Isle and the Little Ross, a beautiful island in the mouth of the river, are objects which cannot fail to captivate all who are not insensible to the charms of rural scenery.

The Dee is navigable two miles above Kirkcudbright for ships of 200 tons. At Kirkcudbright is a safe natural harbour, of easy access, with good anchorage, and sheltered from all winds. In spring tides the water rises about 40 feet. Below St Mary's Isle, and about 2½ above the Little Ross, on the east side, is a large bay called the Manxman's Lake, where 100 vessels may lie safely on a clay bottom. At four hours flood there is a depth of 14 or 16 feet of water either in spring or neap tides. The entrance to it, betwixt the Little Ross and the east shore, is a mile and a half broad. On the west side of the river are two convenient harbours,

Balmangan

Balmangan Bay near the mouth of the river, and the Fish-house, three miles above it.

The Dee abounds with salmon of an excellent quality. The different fisheries at Tongland, Kirkcudbright, &c. are rented at about L. 900.

4th, The Fleet is but a small stream, and remarkable chiefly for the beautiful and picturesque scenery with which its banks are adorned. It is navigable for vessels of light burden to Gatehouse, four miles from the sea.

5. The Cree is much larger, and is navigable to within two miles and a half of Newton Stewart.

The Bladenoch, Luce, and some others deserve to be noticed, only because they afford admission for small coasting vessels, though none of them are navigable at almost any distance from the sea. The fish taken in these rivers may be rated at L. 200.

There are a great many lakes in this district well stored with pike, perch, and trout. Loch Grenoch contains also char. Loch Ryan, though an arm of the sea, has all the appearance of a most beautiful lake: it might well merit a particular description, were not this foreign, perhaps, to the design of the survey. Suffice it to say, that it is a safe and commodious harbour, of easy access, and so capacious that the largest fleets may ride at anchor in it. Intersecting the country to the depth of ten miles, it is of much importance for inland navigation. Herrings are often caught in this loch; but never in great

great quantities, either here, or any where else on the coasts of Galloway*.

With the exception of bays and friths, the shores of Galloway are, for the most part, bold and rocky: and the cliffs often rise to a great height. The hard bottom generally prevalent near the shores is unfavourable for fishing; and very few of the inhabitants addict themselves to this employment.

Galloway is every where well supplied with springs, and rivulets of the purest water: a circumstance of vast importance to the farmer for domestic purposes, for the use of his cattle, for milns, and threshing machinery; and which might also be made subvervient in many parts of the country to irrigation. Chalybeate springs are also numerous. One of these (Lochenbrack) in the parish of Balmaghie, is, perhaps, not inferior in medicinal virtues to any in the kingdom. The mineral ingredients which enter into its composition are sulphate of iron and carbonic acid; but in what proportion I have not been able to obtain accurate information. The spring is copious; the water transparent; not unpleasant to the taste; and a powerful tonic, and diuretic. Of course, in complaints of the stomach, and disorders arising from obstruction or debility, it has often proved a very efficacious restorative, even when patients have been given up by the faculty. Patients afflicted with aguish complaints have always found relief from it; and even in obstinate intermittents, when the

* This year, 1809, the herring fishery in Lochryan has been more productive than in former years.

bark

bark and other medicines have failed, perfect cures have frequently been effected. From time immemorial it has been frequented by numbers, in spring and summer; though the inconvenient situation and want of proper accommodation have prevented it from attaining to that celebrity, to which, from its virtues, it is well entitled. Better lodgings have lately been provided, and an excellent road made from it to the large village of Gatehouse, whence it is seven miles distant, which will in some measure remedy these inconveniences.

CHAP.

CHAP. II.

STATE OF PROPERTY.

In the Stewartry of Kirkcudbright property is more divided than in most of the counties of Scotland; and it has, perhaps, also been subject to greater fluctuation. A few estates are large; but, in general, property varies by a pretty regular gradation, from the estate of the nobleman, who is the first proprietor in the county, through all the intermediate classes of gentry to that of yeomanry; many of whom occupy and cultivate the single farms which they, or their ancestors had purchased. In Wigtonshire property is more accumulated in the hands of a few great proprietors.

The following tables exhibit pretty accurately the different descriptions of proprietors of both counties.

In

In the Stewartry of Kirkcudbright there is

					Real Rent.
1	estate	above			L. 10,000
2	——	from	L. 5000	to	10,000
31	——	from	1000	to	5000
37	——	from	500	to	1000
972	——	under			500

In Wigton-shire there is

					Real Rent.
1	estate	above			L. 30,000
1	——	above			10,000
2	——	from	L. 5000	to	10,000
13	——	from	1000	to	5000
12	——	from	500	to	1000
18	——	from	100	to	500
30	——	under			100

The valued rent of the Stewartry of Kirkcudbright, is L. 114,637 : 2s. Scots, or L. 9,508 Sterling. The real rent, in 1808, was L. 167,125 Sterling. The valued rent of Wigton-shire is L. 67,646 : 17s. Scots, or L. 5,637 : 4 : 9d. Sterling.

	Sterling.
Total of the valued rent of Galloway,	L. 15,181 4 9
Total of the real rent,	267,125 0 0

The lands in Galloway were valued in the year 1642, for the purpose of duly ascertaining the proportion of taxes to be paid by the different proprietors. Supposing this valuation to have been made with accuracy, it appears that the rental of Galloway has since increased in the proportion of very nearly 17 $\frac{6}{10}$ths to *one*. It may be presumed, indeed, that in many cases the former valuation

valuation was made in a careless or arbitrary manner. This seems highly probable from comparing the present value of different farms, in the same district, on which no material improvements have been made. And, it is also probable, that the annual value of the whole lands was then considerably underrated. From that period to the union of the two kingdoms, from causes which are sufficiently obvious to those who are acquainted with the history of Scotland, the rental of lands every where would be diminished rather than increased. So that since the beginning of last century, it would not be too much to reckon, that an increase has taken place nearly in the proportion of 17 $\frac{6}{10}$ths to one.

This increase of the value of lands is, however, far from being uniform. In moor parishes, the real rent in Sterling money seldom equals the valued rent in Scots money; whilst, in some parishes of the lower districts, it is more than double, and in some farms three or even four times as much. This may, in part, be ascribed to different degrees of exertion made by proprietors in the improvement of their lands; but it ought to be ascribed still more to the far greater scope for superior management in agriculture than in pasturage; and, from this circumstance it is probable, that the value of lands will still increase more in the lower than in the higher districts.

As all the county assessments for roads, public buildings, &c. are proportioned according to the valued, and not the real rent, it is evident that they must fall very unequally on the different proprietors. Yet no attempts have been made to adjust this inequality. To do this, indeed,

indeed, would be more difficult than may at first be imagined. It does not appear to be practicable without the interference of the legislature; and how far this would be proper it is not our province to investigate.

A variety of instances might be adduced where the present rents of farms are equal to the prices paid for them in the memory of persons still living. The rental of some large estates, and even of whole parishes, has increased in the proportion of eight or ten to one in the course of the last fifty years; and, in the last twenty years, the increase has been as rapid as at any former period.

Though in this there is, perhaps, nothing peculiar to the district, the account may be of use to assist in forming a comparison of the progressive rise in the value of land in different parts of the kingdom.

Management.

It were an invidious task to describe minutely the very different management of estates in this district. The Reporter cannot, however, forbear remarking how forcibly he has been struck, in the course of his survey, with the very different state of improvement upon estates possessing similar advantages; and which must be ascribed to the proprietors themselves, or to those entrusted with the management of their property. On some estates, the same poor accommodation of buildings, the same awkward sub-division of farms, or total want of fences and inclosures; in a word, the same wretched plans of husbandry which prevailed forty or fifty years ago, are still

 continued.

continued. Almost no advantage appears to have been derived from all the important discoveries and improvements of agriculture, either for ameliorating the condition of the farm, or increasing the comforts of the occupier. Where this is the case, the blame, in part, devolves upon the tenant; much of it, however, as will appear, must also attach to the proprietor.

In the management of other estates, and perhaps the greater number, attention and judgment are displayed on the part of the proprietors, with sufficient liberality in giving encouragement to the possessors. The mere circumstance of immediate pecuniary returns does not engross the whole of their attention. The permanent improvement of their lands, the credit and comfort of their tenants and dependents, the ornament and general improvement of the country are taken into the account.

They are judicious in sizing and sub-dividing their farms; careful in the selection of their tenants; liberal in advancing money for buildings, fences, drains, manures, roads, &c. and some of them, also, not remiss in forming plantations, which Galloway so much wants; and for which, in many places, it is peculiarly adapted.

In many cases the improvements in buildings are specified at the commencement of a lease, and executed by the landlord, having the tenant bound to carry the materials and keep them in repair. This is a much better practice than to grant a sum of money, which is sometimes done, leaving the application of it to the tenant. In building dykes and cutting drains, the expence is often defrayed conjunctly. The proprietor builds the dyke, the tenant furnishes the stones; the proprietor cuts

cuts the drain, and the tenant fills it up, if a covered one; or if an open one, cleans and keeps it in repair. In planting, weeding and repairing hedges, unless the proprietor take charge of the whole, which is seldom the case, they never almost come to perfection.

At the commencement, or during the currency of a lease, the landlord often advances money for these or other improvements, and receives 5, 6, or 7½ per cent. in addition to his rent. An excellent practice where tenants are not sufficiently opulent to undertake these expensive improvements from their own capital. On the other hand, the tenant sometimes executes certain specified improvements, on condition of being indemnified to the extent of their value at the termination of the lease. This is very apt to terminate in a litigation.

But there are many landlords, and among these some of the most considerable in the district, who lay out no money on their farms, and whose management consists wholly in receiving their termly rents; leaving their tenants to carry on improvements by their own capital, or otherwise to provide themselves as they best can. The comparative poverty and bad cultivation of such estates, and the ultimate loss to their proprietors, must be fully apparent to every attentive observer. And the mischief is sometimes aggravated when the management of estates is committed to gentlemen of the law as factors, a practice too general in some other parts of Scotland, but happily very rare in this district.

The extensive division of property in Galloway, and regular gradation in the value of estates, is favourable to agricultural improvement. The small proprietor who

occupies his own farm, commonly improves it with great diligence. Though nearly on a level with the common farmer, he mixes occasionally with those above him, who, in their turn, also associate with the higher orders; and all, perhaps, have their ideas enlarged from this intercourse. The portion of knowledge which one part has obtained is soon circulated through the whole mass. And whilst subordination is preserved, the whole community is thus also better united; so that in a political, no less than economical view, such a *division* and *gradation* of property is of advantage to the commonwealth.

There are a considerable number of very small possessions granted off in villages, &c. on feus; for which is often substituted the simple form of a perpetual lease. In either way the possessor is secured in a perpetual and independent tenure. It is wonderful with what industry these little spots are cultivated; what exertions are made to bring the wildest and most rugged surface to the fertility of gardens. It deserves also to be noticed that the feuer, inconsiderable as his little property is, often acquires with it a new set of ideas; and though before disaffected, adopts a turn of mind more favourable to the established government. So true it is, that a very small portion of the benefits of society is sufficient to attach most men to the government under which they live.

A large portion of the lands in Galloway, probably not less than one half, is subjected to entail. Many of the deeds of entail have been executed very lately. If the same spirit shall continue among proprietors, there is reason to apprehend that the whole lands will be locked

locked up from exchange or alienation, and the country deprived of all the advantages which the free circulation of landed property is calculated to produce. The restrictions in entails are very different; but even those which are most moderate, must be regarded as inimical to agricultural improvements, and to the general prosperity of the country.

CHAP. III.

PROGRESS AND GENERAL PLAN OF HUSBANDRY.

The condition of the peasantry of Galloway, at a period not very remote, appears to have been depressed, and the state of husbandry rude and barbarous in the extreme. The facts which are subjoined, are all in the recollection of persons now living; and, were there not proper documents of their truth, the traces of them still remaining, are such as must render them sufficiently credible.

Estates appear to have been broken down into very small farms; or when farms were large, they were held in *common* by two, three, or even four different tenants, who divided the labour and produce in a proportion corresponding to their rent. These, when in tillage, were sometimes *run-rigg*, where each had his portion allotted;

allotted; sometimes the whole was ploughed, sowed, and reaped in common, and the produce divided in the field, barn, or barn-yard. Houses or sheds for the whole cattle of the farm never entered into their conceptions. Their cows were, indeed, not uncomfortably lodged: very often under the same roof with themselves, and sometimes without any intervening wall or partition. Their houses were commonly wretched dirty hovels, built with stones and mud, thatched with fern and turf; without chimnies; filled with smoke; black with soot: having low doors, and small holes for windows, with wooden shutters; or, in place of these, often stopped with turf, straw, or fragments of old clothes. They were commonly placed in low and sheltered situations; and, lest their thick mud walls, almost without any aperture to receive the air or light, should not afford them a sufficient defence against the inclemency of the weather, they usually placed some of the offices immediately in front, at a distance merely sufficient to afford them an entrance.

Their farms were always overcropped and overstocked. Ten, twelve, or fourteen horses would not have been reckoned sufficient for operations of husbandry which are now performed by two or three. Four horses were yoked a-breast to the plough. The plough-team sometimes consisted of six or eight. These were conducted by a boy. Two men besides were necessary; one to hold the plough, and another, provided with a fork, to assist in regulating the depth of the furrow. Their furrows were never drawn in parallel lines, nor was any attention given to form the ridges of an equal size. Hence a waste of seed and increase of labour.

The old Scotch plough, large and massy, but coarsely put together, was the only one then known. If their ploughs were bad, their harrows were still worse—made all of wood, and commonly very light. This was indeed a very necessary precaution, as they were always drawn by single horses, and these horses, at that season, were commonly so feeble and emaciated, that with the slightest incumbrance, they were scarcely able to crawl along the coarsely ploughed lands. The teeth of their harrows were made of thorn hardened in the smoke; and were sharpened every morning. With these the fields were scratched over, and *part* of the seed was covered. The crop, however, was seldom a thin one; for as none of the couch grass, or root weeds were destroyed by fallowing or green crops; these sprung up in abundance. But though the return, in harvest, of course, was bulky, only a small proportion of it consisted of grain—commonly as indifferent in quality, as it was trifling in quantity.

Carts, tumbrils,* &c. were not introduced till long after this period. Dung and ashes, the only manures then used, were dragged to the field in carrs;† or more

* A term used in Galloway to denote carts whose wheels are not made with spokes, but with solid planks of wood cut into a circular form; such carts, we are informed, are still common in Ireland, and in some counties of England.

† *Carr.* A machine resembling a cart, when the wheels are taken off. It was spoked, however, in the bottom, and provided with a back, spoked also; and which could be taken off at pleasure. When used for conveying dung, ashes, &c. a matting or net-work made of straw ropes was spread upon the bottom. This was termed a *coup*: probably from the facility with which by means of it the carr was unloaded.

frequently

frequently carried to the field in creels on the backs of horses; and as the horses were weak and ill fed, they were assisted by the men and the women, who also carried creels of a different description. A great part of the labour of summer consisted in preparing and bringing home the peats*. These were also brought home in creels, but oftener in canvas bags: and when marle was first used as a manure, it was also conveyed in bags to the field, often in the humid state in which it had been dug from the pit.

The management of the farm was, in other respects, equally wretched and injudicious. It was divided into Infield and Outfield. The Infield was kept always in crop, and received the whole manure which could be collected. It was sometimes sown with oats, commonly, however, with bear—hence it still retains the appellation of *Bear-land*, or Bear-*Feys*. The Outfield was sown year after year with *Grey Oats*, (the only grain it would produce) as long as the crop was expected to repay the seed and labour. It was then abandoned till time should repair the exhausted state to which it had been reduced; when the same series of cropping was again repeated, often without any manure. Sometimes, however, they manured the field intended to be broken up by penning the cattle upon it, at night, and during the heat of the day, in turf folds, or with wooden pilings, which they shifted at pleasure. The land thus enriched would yield three or four tolerable crops; but they never desisted from cropping so long as it would produce any increase. It may easily be conceived to what an impoverished state the soil would be reduced,

* A species of fuel common in Scotland. (See the section on fuel.)

and

and what scanty returns, either of grain, or pasture, it would afford under such wretched management. Twenty-four bushels of grey oats per acre was reckoned a good produce; and when left in pasturage, it was covered chiefly with heath, whins, or such weeds as grow on exhausted soils: and scarcely had it a cover of any thing like grass, when it was again doomed to the ravages of the plough.

The principal object of extensive tillage was to afford straw for the winter support of the few cattle which the pasture (if such it could be called) maintained in summer. As they always overstocked, this was a difficult task; and the poor starved animals before the return of spring, were reduced to the greatest extremities. Through mere weakness, often, they could not rise of themselves. It was a constant practice to gather together neighbours to lift the cows or horses, or to draw them out of the bogs and quagmires,, into which they had been tempted by the first appearances of vegetation.

With such implements of husbandry as have been described, with such accumulated unproductive labour, where triple the number of men and of horses which are now employed, were found requisite to execute almost any given piece of work, whilst in other respects the management of their farms was equally bad, or perhaps still worse, it was not to be expected that the lands could yield any tolerable rent to the landlord, or bring any returns of profit to the occupier. Nothing, indeed, but the frugal penurious manner in which the peasantry then lived could have enabled them to subsist, and pay any rent whatever. Their clothing was of the coarsest materials: their furniture and farming utensils

sils were often made by themselves: their food was always the produce of the farm, and as little expensive, consisting chiefly of oatmeal, vegetables, and the produce of the dairy: if a little animal food was occasionally added, it was generally the refuse of the flock, unfit to be brought to market. By disposing of the better sort of their cattle, and in some farms, of the small overplus of grain, and of the dairy, they were enabled to defray all incidental expences, and pay a trifle of rent. The value of land appears, however, to have been so nugatory, that in the end of the seventeenth century, there were actually instances of farms being left entirely waste, as unable to pay the expences of cultivation.

Soon after this, when the Union had opened an unrestrained market for lean cattle in England, the gentlemen of the country seem to have perceived the possibility of deriving a better income from their lands. Grass, which had before been an object of no value, and was considered in no other light than as a fallow to enable the lands afterwards to produce some oat crops, now became valuable on its own account: and cattle were the chief source from which gentlemen might expect a revenue†. They, therefore, exerted themselves to improve their pasture lands. By a variation in the mode of cropping only, or with much less violent innovations than were actually attempted, it is probable that this object might have been obtained, and the crops at the same time much improved.

† The extraordinary disproportion between good arable and other lands appears from this: By act of Parliament James IV. par. 18. cap. 4. Sixteen Soum's grass was only reckoned an equivalent for four acres arable. From that period till the union, the value of lands probably diminished.

But

But the improvements of husbandry were then altogether unknown, and, perhaps, there was not a single individual in Galloway who had found out the important secret of cropping a farm constantly, and keeping it still in good order, and always productive. The palpable superiority of the herbage about gentlemen's houses, kept constantly in grass, for the accommodation of their families, could not fail to strike them with conviction, that it would be for their interest to keep a smaller portion of their lands in tillage. By the improved market for cattle, such lands yielded them considerable profit; whilst lands equally adapted for tillage afforded but a scanty subsistence to tenants, and scarcely any overplus for rent. Their object, therefore, was to encrease the quantity of the grass; and to attain this, they knew of no other means, than to give the land a longer respite from tillage, either by throwing farms wholly into grass, or at least by cropping them to a much less extent. About the year 1715, or 1720, it appears to have been the intention of most landlords to reduce the tillage from one-half to one-third, and in some cases to one-fourth of the arable land. This violent innovation created a dreadful alarm among the tenantry, and all the lower orders. It was not easy to persuade men universally attached to long established opinions, confirmed by invariable practice, that it was possible to produce more corn from one-third or one-fourth, than from one-half of their arable lands. To satisfy the tenants, whilst under the influence of these prejudices, it was necessary to give them as much land for corn as before; which could only be done by increasing the size of their farms, and, of course, throwing several into one. Improvements, thus carried on by turning many people out of their farms, excited a general odium; which was greatly

ly increased by the ill-judged precipitation of the gentlemen in ejecting too many at one time, and without affording them any other resources of occupation, or means of subsistence. The animosities occasioned by this measure arose to such a height, that in 1720, an insurrection actually took place; and the peasantry in the lower parts of Galloway assembled in parties of several hundreds, throwing down the stone dykes which had been built for inclosures, without, however, attempting any other violence. From this circumstance they got the name of *levellers;* and the disturbance is still spoken of in the country by the name of *levelling*. After the suppression of it, a number of people are said to have left the country. This is assigned as the cause of the thin population of Galloway; which, however, independent of the circumstance of this insurrection, may be accounted for from the system of grazing, too precipitately then introduced. Inclosing afterwards meeting with no opposition, went on rapidly; and grazing has ever since been a favourite object with the farmers and land-holders of Galloway. Every where, except in a very small district, the interests of agriculture have been subordinate to the attention given to cattle; and till a very recent period, the improvements in husbandry have not corresponded with the general progress of knowledge.

The most material change that has taken place, since the inclosing of farms, has risen from the introduction of *calcareous manures*.

About the year 1730, shell marle was first discovered in Galloway, by some gentlemen who had seen it used in the north of Ireland; and a person from that country accustomed to the bogs where it was lodged, was

was employed to search for it in Galloway, and was succesful in a great number of places.

The astonishing luxuriance of the crops obtained by the application of this manure, spread its reputation fast, and created an universal eagerness to procure it. It was similar to the rage with which men explore the bowels of the earth in search of the precious metals.

It is not to be wondered at that on the first introduction of calcarious manures, among a people unacquainted with the principles of good husbandry, the management of them should not be judicious. Delighted with the extraordinary fertility produced, and imagining it was to have no end, they continued to crop till the crops became as poor as before; and were astonished when they found that a repetition of the manure was not accompanied with a renewal of fertility. Six or eight were not uncommon: instances are even mentioned of nine or ten of bear *, and of twelve or thirteen of oats, without interruption, or the use of any other manure. The consequence, however, was, that the soil was reduced to a mere caput mortuum, and remained thinly covered by wild sorrel, and the poorest grasses.

It was at length discovered that no permanent benefit could be derived from the use of marle, without moderation in the subsequent cropping. As soon as this was understood, the evident interest of the proprietors led them to impose restrictions; and the tenants were in general debarred from taking more than three successive crops of grain after the application of marle,

* Big.

and

and were also prohibited from breaking up the pastures till they had lain in grass six, and in some cases nine years. The use of marle was soon followed by that of sea-shells in places near the shore, and afterwards by that of lime, imported from Cumberland; a manure, which being more portable, is chiefly used for lands which do not possess marle or shells within their own limits; and which has extended the benefit of the same improvements to all parts of the district.

The use of calcareous manures has banished heath and fern from large tracts of land, which are now covered with verdant pastures, and with tolerable crops of grain; but neither the corn nor the grass could ever attain much luxuriance of growth, while the land was periodically exhausted by the recurrence of three successive crops of oats. This barbarous system continues even at this day in some parts of Galloway; and, a few years ago, it might be considered as the prevalent management of the greatest part of the district.

A remarkable exception was to be found at a very early date, in the agriculture of the late Mr Craik of Arbigland, and of a school of farmers who formed themselves on his model. Mr Craik, who died in the year 1798, at the advanced age of 95, was a man of great originality and unconmon powers of mind. By his own unassisted exertions, he devised and carried into effect a system of the best husbandry, at a period when nothing similar was to be seen in the neighbouring country, and scarcely in any part of Scotland.

About the year 1750, he was first led to attend to agriculture by the celebrated publication of Mr Tull. For

For some years he continued to follow the practice recommended by that author; and he gave a very full trial to the method of drilling and horse-hoeing wheat continually on the same land. His attention, however, being thus attracted to rural affairs in general, experience convinced him that there were other improvements in his power, both more urgent and more profitable. Relinquishing the theoretical refinements of Mr Tull, he applied himself to the improvement of his land by inclosing and draining; by effectual fallows, and the application of calcareous manures. He introduced implements of agriculture of the most approved construction; and along with these, adopted the practice of ploughing with two horses only. He did not neglect the means of collecting putrescent manure, which he applied to his fallows and fallow crops. He retained the practice of drilling turnips and beans, and introduced these with the use of sown grasses in the rotations of husbandry, which he prescribed to the tenants on his estate, where, under his vigilant superintendance, a system of excellent agriculture was regularly established, while all the neighbouring country remained under the most barbarous management.

The example of Mr Craik was not entirely lost upon his neighbours. In the vicinity of Dumfries, some gentlemen entered with zeal into plans of improvement upon the model pointed out by him. Great exertions were made in inclosing and reclaiming land by calcareous manures, accompanied by fallows and fallow crops. The facility of credit which, about the year 1771 †, pro-

† The Ayr Bank commenced it operations in 1769, and stopped payment in June 1772.

ceeded from the establishment of the Ayr Bank, gave a considerable impulse to the spirit of improvement. About this period, several gentlemen of property and education devoted themselves to the profession of agriculture, and carried the practice to a high degree of perfection. Upon the farm of Terregles, in particular, the late Mr Dalzell carried on a system of agriculture not excelled perhaps at that date in any part of the kingdom. By the influence of such examples, some reform was effected in the practice of the ordinary tenantry in the district immediately adjoining to the Nith. A better and a more effectual tillage was given to the land; more attention was paid to the collecting of putrescent manures; better implements of husbandry were introduced, and labour was more œconomically applied. Some progress was also made in the management of fallowing and fallow crops, particularly turnips. These improvements did not extend to any great distance from Dumfries; and the tenantry of that neighbourhood accordingly obtained the reputation of being better tillage farmers than in other parts of Galloway. The advantages of a liberal and enlightened system of agriculture, however, were not well understood by them. The disposition to overcrop was not extinguished, and those landlords who were desirous of treading in the footsteps of Mr Craik, found great difficulty in keeping their tenants to a proper rotation.

While the example of Mr Craik and his disciples had thus excited a spirit of improvement in the neighbourhood of Dumfries, various attempts were made to carry the new system farther into Galloway. The late Dunbar Earl of Selkirk, whose friendship and confidence Mr Craik had long enjoyed, and who was an

early convert to his mode of management, was desirous of introducing it upon his own estate. With this view, his lordship induced a gentleman of Mr Craik's school† to take a large farm in the neighbourhood of Kircudbright; but this, and every other effort which was made to extend and perpetuate the liberal and enlightened practices of Mr Craik ultimately failed; and it is a melancholy fact, that by the time the country had reached the extreme point of depression after the termination of the American war, they had nearly vanished even from the vale of the Nith. The turnip husbandry had almost entirely disappeared, and fallows were either disused, or were executed in so slovenly a manner as to be worse than useless; and the fruits of Mr Craik's splendid exertions which remained, consisted chiefly in the improvement of the implements of husbandry, in the more œconomical application of horse labour, and in the employment of the drill husbandry in the culture of potatoes. Ever since Mr Craik's time, the management of the potatoe crop has, even among the ordinary tenantry, been pretty correct; the cultivation of it, too, has been extended, particularly along the coast; but as a considerable part of the produce is exported, it has been of much less value as an ameliorating crop, than it would have been, if the produce had been applied to the feeding of cattle.

It is a remarkable circumstance, and well deserving the attention of the students of political œconomy, that the excellent examples of husbandry which Galloway has produced at an early date, should have effected so little change in the general practice of the farmer. The

† Captain Ewart.

husbandry

husbandry of Mr Craik, Mr Dalzell and some of their cotemporaries was not inferior, in the most essential points, to that of Mr Dawson of Frogden and other fathers of the husbandry of Berwickshire and Tiviotdale †; yet what a difference in the subsequent progress of improvement in these different districts!

The cause of this difference is a subject of curious investigation.

Mr Craik being a man of fortune and of high acquirements; and most of his immediate followers, if not men of fortune, at least of the rank of gentlemen, and elevated far above the situation of the tenantry of the district, it is reasonable to suppose that this circumstance may have had some influence in retarding the progress of the admirable system which they practised; for it is well known with what distrust the practical farmer is ever apt to view the agricultural operations of the gentleman ‡. There is reason to think, too, that

† Mr Dawson entered to the farm of Frogden in the year 1759, but it was not till the year 1764, or 1765, that he practised the drilling of turnips. Mr Craik, therefore, was the earlier improver of the two. They both possessed great powers of invention, and pursued the same tract, without having any knowledge of each others plans. Mr Dawson retired to Edinburgh some years ago, where he still continues to enjoy the fruits of those enlightened labours by which he conferred a lasting benefit on his country.

‡ Lord Kaimes, Mr Pringle of Lees, and some other *gentlemen* farmers, who practised an improved husbandry, at a very early period, in some of the eastern counties of Scotland, are said to have had *no* followers among the ordinary tenantry. As a proof of the caution with which this class of men proceed, Mr Dawson, who was himself a real practical farmer, on being asked when his neighbours began to follow his example, answered most pertinently, "When they began to perceive that I was growing rich."

although the Ayr Bank gave, at *first*, an impulse to the spirit of improvement, the ultimate effect of it was unfavourable to the establishment of a better system of agriculture. The facility with which credits were obtained, induced speculative individuals to engage rashly in extensive agricultural operations: these were often conducted with a too great disregard of expences, and when the Bank stopped payment, were followed in some instances by such ruinous consequences as could not fail to bring a certain degree of discredit upon agricultural improvements in general. Independent of these considerations, however, the different state of the tenantry, in respect to capital, in the two districts which have been mentioned, may probably have had a considerable effect in producing the striking differences in the progress of improvement.

East Lothian, Berwickshire and Roxburgshire, have long been occupied in large farms, and by men of greater opulence * than other parts of Scotland. An example of improved husbandry was there exhibited to men possessing sufficient property to avail themselves of the discoveries of a bold and original genius. In Galloway, on the other hand, the tenantry were too weak in

* An attempt has been made to trace this difference to the dreadful succession of bad seasons, which about the end of the 17th century, reduced to beggary the tenantry of almost every part of Scotland, but is said to have affected the south-eastern counties less than the rest of the kingdom, and not to have there produced the same indiscriminate ruin. In many other districts, the tenants being completely ruined, the lands were let to men who had before been mere cottars, herds, or labourers:—in some instances, farms even remained unoccupied, no one being willing to take them under the charge of paying the public and parochial burdens.

capital,

capital to derive equal advantage from such an example. They proceeded with timidity, and with that eagerness for *immediate* profit, which is one of the most powerful obstacles to the establishment of an enlightened system of agriculture, and which always marks the operations of farmers of inferior rank occupying small portions of land*.

For some time after the termination of the American war, the spirit of improvement was quite dormant. On observing it beginning to revive about the year 1786, the late Earl of Selkirk, who had very enlightened views with regard to rural œconomy, became extremely desirous of effecting various improvements upon his estates, both in the Shire and Stewartry. He was then, however, too far advanced in life to engage personally in the business; and, as the best means of attaining the object in view, he, by an act of generous confidence, transferred the whole management of his estates to his son, the late Basil William Lord Daer.

The talents of this young nobleman were of the highest order, and the ardour with which he turned his powerful mind, to the investigation of every subject connected with rural œconomy, was only equalled by the perseverance and ability which he displayed in the practical execution of his plans. In the management of his father's estates he set an example of enlightened liberality; and his influence was most zealously exerted in promoting every public measure of utility. Roads and bridges,

* This reasoning derives some confirmation from the effect which a greater accumulation of capital in the hands of the tenantry, occasioned by the high prices which prevailed in the late seasons of scarcity, has had in quickening the progress of improvement.

as the great ground work of other improvements, were early the objects of his most anxious attention. The unexampled success with which he applied himself to this branch of rural œconomy, and the spirit and judgment which he displayed with regard to farm houses, and useful and ornamental plantations, will fully appear in the sequel.

In carrying forward his bold and decisive plans of rural improvement, he had to encounter much opposition: his views were sometimes mistaken, and his motimes misrepresented; every difficulty, however, served only to encrease his ardour, and he had at last the satisfaction of seeing the mists of prejudice beginning to vanish before him. But alas! while indulging in patriotic anticipations, a mortal disease had taken root in his constitution. Having been seized with symptoms of pulmonary consumption in the course of the preceding year, he fell a victim to that fatal malady on the 5th of November 1794, at the early age of thirty.

Any attempt to delineate the general character of this lamented nobleman, or to describe the universal sorrow which on his death pervaded all ranks in the district, would be here out of place; but it is proper to remark, that the period during which he managed his father's estates, must ever be held a most important epoch, in the history of the rural œconomy of Galloway. Fortunately for that district, his plans have been followed out with great ability and success, by his brother the present Earl of Selkirk.

CHAP.

CHAP. IV.

BUILDINGS

SECT. I.—HOUSES OF PROPRIETORS.

As the houses of gentlemen have but little to do with the purposes of agriculture, what relates to them shall be dispatched in very few words.

The varied surface of Galloway indented with bays, intersected with streams and rivers, and agreeably diversified with hill and dale, affords a variety of beautiful situations for the mansions of gentlemen: and as some of the great proprietors, and most part of those of moderate fortunes, reside on their own estates during the whole, or a part of the year, attention has been paid to the choice of situations, and a considerable degree of taste diplayed in the construction of buildings, and in layin out their pleasure grounds. Even in former time s, when the habitations of the lower orders were

not

not more remarkable for their meanness, than for their very inconvenient situations, the seats of the great proprietors were, in general well chosen. Most of the old castles, abbies and priories are beautifully or romantically placed. This, among other circumstances, may be adduced as a monument of the feudal spirit of the times, when the haughty baron looked down with proud disdain on his enslaved vassals: or the ambitious abbot commanded the services, or amassed the revenue of a whole district.

In passing through a country, which presents at first view an aspect so wild and bleak as Galloway, a stranger would be agreeably surprised to find so many of the beauties of nature or art—vestiges of antient greatness, or modern opulence. In giving this general character of the buildings in Galloway, it is by no means to be understood that these observations will apply to all, or most of them; or that good taste reigns more here than in many other parts of the kingdom. To enter into particulars would doubtless subject the reporter to some odium; and perhaps expose his own want of taste.

But it is pertinent to remark, that many of the gentlemen, both of the Shire and Stewartry, have turned their attention to agriculture, and provided themselves with offices of every description for accommodation suitable to their rank, and adapted, on a large scale, for all the purposes of the most complete system of husbandry.

Many of the proprietors of moderate, or small fortunes, who reside on their estates—in the plans of their their dwelling-houses and offices, have combined neatness

ness with convenience; though it is surprising that this should not be more generally the case—since the expence of a good plan is a mere trifle, and the execution often less than in a bad one.

SECT. II.—FARM-HOUSES AND OFFICES.

AMONG the buildings for the accommodation of farmers, there is, in this district, the greatest possible diversity. Whilst some of them continue nearly in the same wretched state in which they were at the middle of last century, many are now constructed in a stile of elegance and convenience, seldom surpassed in any other part of the united kingdom. In no place has improvement, notwithstanding many discouragements, advanced with greater rapidity. Basil William Lord Daer was the first who set the example; and gave, as it were, a new direction to the ideas of the gentlemen of the county on this and other important articles of rural œconomy. He began his operations on his father's estate in the year 1786. Prior to this period, some others had indeed done a little, but not enough to make any impression on the public mind, or even ascertain what the real advantage of such improvements ultimately might be. The farms on this estate, though considerably different in their extent, are generally however of a proper size; and almost every tenant is accommodated with a good dwelling-house, and a complete set of offices. The dwelling-house commonly consists of two stories, and always of four, five, or six apartments. Barns, stables, cow-houses,

cow-houses, and sheds are provided, suitable to the size of the farms, all on very judicious plans; built with stone and lime, and covered with good slates. Almost every farm has also a good threshing machine driven by water, or wrought with horses. Mr Corrie of Dunrod, Sir William Douglas, and many others soon followed the example. Mr Oswald of Auchencruive has lately built, and Mr Gordon of Balmaghie is now building farm-houses, &c. on a scale which, by many, is deemed extravagant. The reporter entertains a different opinion. If the object of these gentlemen had been merely to add to their income, more œconomical plans would better have answered their purpose. But if we consider that these add much to the ornament as well as real improvement of the country—afford employment to the industrious class of labourers and artisans, and encouragement to men of talents and capital to embark in the useful and honourable occupation of husbandry, a doubt cannot be entertained, that the capital thus expended is employed to a much better purpose than it would have been on any of the pursuits of modern luxury or fashionable dissipation. Perish the idea that they will be the means of fostering luxury, or extravagance among the tenantry, or of inducing them to vie with their masters in shew, idleness, or the expences of the table.

Without capital men are not fit to engage in the pursuits of agriculture on a large scale: without industry and proper œconomy, they cannot long carry them on. If, from good accommodation, something is added to the expences of household establishment, it must be retrenched from other expences, equally unnecessary, and far more pernicious. After all, it is admitted, that moderation in this respect, as in every thing else, is best: but we apprehend there is little danger on the extreme

of

of liberality, where one class of men is making provision for the accommodation of another.

On the estate of Baldeon, and other parts of his property, the Earl of Galloway has provided accommodation for all his tenants in the same excellent stile. The names of many others must be omitted, for it would extend this article far beyond its proper limits, were I barely to mention every individual who has given proofs of the same spirit of liberality.

In the Shire, the farm-houses and offices (though with many exceptions) are much inferior to those of the agricultural district of the Stewartry. It is, however, but just to mention, that some of the proprietors are sufficiently liberal; and in a few instances, the reporter found buildings and other improvements, executed by tenants which would have done them credit, though they had been proprietors of the farms which they occupied.

Notwithstanding the rapid progress of improvement, the buildings in many places, especially in the moor and mountainous districts of both counties, are still extremely defective. It is very common to find tenants renting farms of some hundreds a year, who still live in paltry hovels, and whose landlords, though possessed of large fortunes, are unwilling to lay out a single shilling to make them better, from the illiberal idea that this will add nothing to their rent.

It is a curious fact, that after sheds and strawyards had been built, many tenants shewed an extreme aversion to the use of them, from the idea that it would waste their fodder, and check the growth or injure the health of their

their young cattle; and thus more than counterbalance the profit arising from the increase of manure produced by them. This erroneous opinion is now exploded. All are anxious to obtain sheds on arable farms: and some tenants, where the landlords will not defray the expence, build them at their own. They are often, indeed, executed at a very trifling expence, and yet answer the purpose pretty well. Built of dry-stone walls, thatched with turf and a few handfuls of straw, they afford good shelter for several years. When the cover fails, it is mixed with the dunghill; and with little other cost except a few days labour, it is again renewed.

Indeed, where buildings of any sort are executed by tenants, even when a sum of money is granted by the landlord, which is the practice on many estates, they are seldom either well planned or substantially executed. For the most part, a piece of new building is patched to the old, which at the same time receives a few slight repairs: and before the expiration of the lease the whole is good for nothing. Sometimes the necessary buildings are specified in the lease, and executed by the landlord, the tenant carting the materials. This is a better, and, ultimately, a less expensive method for the landlord, than to grant a specified sum to be laid out at the discretion of the tenant. Sometimes the proprietor provides all necessary buildings at 5, 6, or 7½ per cent. In this case, the proprietor ought always himself, or in concert with the tenant, to fix on the situation, plan, and mode of execution. It is usual to bind the tenant to keep, and leave the houses in repair; which is certainly equitable, if he receive them new, or in good condition. And it might be proper to insert a clause in the lease, binding the tenant to *insure* the buildings,

or

or at least specifying on whom the loss should fall in case of fire or other accidents.

In the moors, thatched roofs are still very common; and for this purpose straw, fern, and sometimes heath are employed. In the lower district slate roofs are most prevalent; but, to save expenses, a thin light kind of slate is often used—a most injudicious piece of œconomy. They are liable to be carried away by every blast. A good straw or fern cover is in reality better.

As all the most expensive materials of building are imported, the whole cost varies considerably with the distance from the shore.

Slate roofs, at a small distance from it, cost about 9s. per square yard, at the present high prices of wood, viz. 4s. 6d. per cubic foot. Walls, two feet thick, where stones are not difficult to be procured, from L. 7 to L. 7 : 10s. per rood of thirty-six square yards.

The whole buildings necessary to give complete accommodation on a farm of three hundred acres, one-third being in white and green crops, stocked with fifteen cows, six horses, sixty aged and young cattle, may amount to L. 1200 Sterling.

On this article, I hope, it will not be considered as a digression, to take notice of a most unreasonable statute lately enacted, which seems to have been intended for the purpose of giving certain districts, already highly favoured with the means of improvement, a still more decided advantage over others, where these are wanting; I mean the act which imposes a duty of 33½ per cent.

cent. *ad valorem* on slates and free-stone (if not used in paving) borne by water carriage beyond the limits of a custom-house district. The principle of this law is certainly most iniquitous. If, owing to the length of carriage, the expense of building is enormously high, where can be the justice or sound policy of increasing that expense, by an unequal and most oppressive tax, from which the great body of the community is exempted. It is absurd in another point of view. Suppose a gentleman has slate, free-stone, or granite, on the other side of a creek or river, in his own estate, he contrives to avoid the expense of the duty, trouble, and fees of custom-house officers; but to do so, he is needlessly subjected to a long and inconvenient carriage of them by land.

SECT. III.—COTTAGES.

For a series of years, it has been a favourite object with the Galloway farmers, to *pull down* old cottages; but not *to build* new ones. Maintenance for a cow, a hog, and perhaps a numerous family; with the expense of fuel, thatch for the hut, &c. all of which would come from the farm, were considered to be such burdens, that it appeared adviseable to send all the cottagers into villages, and to have the operations of the farm performed by house servants. The consequence, however, has been, that whilst the labours of husbandry are daily increasing, the most active and industrious labourers are daily diminishing. The evil is now seriously felt, and the only

ly proper remedy begins to be applied. Whilst a few of the old cottages remain as monuments of the rude taste and frugal manners of our ancestors, here and there a new one makes its appearance, neatly enough constructed—commonly with stone and lime, sometimes with a slate roof, and always with at least two apartments. None of them, however, merit a particular description.

CHAP.

CHAP. V.

OCCUPANCY.

SECT. I.—SIZE OF FARMS.

THE size of farms in Galloway differs exceedingly. In the moors, where the quantity of tillage is very considerable, and the occupiers chiefly employed in rearing sheep and some black cattle, the farms extend over great tracts of land, often very unproductive. Six, seven, or eight square miles is no uncommon size of a farm. Some even reach to ten, or twelve. But it is usual, and much more accurate, to estimate such farms, not by their contents in acres, or square miles, but by the quantity of stock fed upon them. From 20 to 120 score of sheep, as their ordinary stock, will give a pretty just idea of the farms, in the mountainous parts of Galloway: and it is no unsual thing for one farmer to have several of these farms in his possession. The facility with which they are managed, enables a farmer, bred

bred to the business, and with a sufficient capital, to farm to almost any extent. It is only necessary that he should visit his farm three or four times a-year; on all other occasions the management is committed to the shepherds, who are usually intelligent men, and in other respects not unworthy of his confidence. From this facility of management arises, perhaps, too strong a temptation to engrossing †. And the successful speculator, increasing in ambition with his increase of capital, would be led to monopolize the occupation of a large tract of country. But the evil is commonly prevented from spreading far; as competitors equally successful, and no less ambitious, always are found to check monopoly and counteract such schemes of aggrandizement.

There are only a very few individuals in the mountainous districts who farm on a small scale.

In the cultivated parts of Galloway, farms vary much in their dimensions. Some consist of 500 or 600 acres; but 200 is nearer the average; and, in the Stewartry, would be considered as a middle-sized farm. In the

† *Engrossing* and *monopolizing*, it may be said, are terms inapplicable to the case. The successful farmer extends his business on the same principle with the successful merchant; and there cannot be a good reason given why the one should be stigmatized as a monopolizer more than the other. Instances probably have occurred where the merchant, as well as the farmer, has extended his speculations so far as to form a monopoly in certain articles. From the extensive field presented in almost every branch of commerce, this, however, must be a rare occurrence; and, even in farming, though here much less scope is afforded for the employment of an overflowing capital, it certainly does not happen often. We would, therefore, by no means be understood to insinuate that the evil can ever be of so serious a nature as to justify any political regulation on the subject.

Shire (with the exception of Lord Galloway's lands), the farms, both for pasturage and agriculture, are generally smaller than in the Stewartry.

It has, for a series of years, been the practice with many proprietors, to annex small farms lying contiguous: and this, we apprehend, has been attended with much advantage to the improvement of the country; nor has it yet, in any case, been carried too far. By this means less capital is expended in buildings; more productive labour may be performed at the same expence, without any essential improvement being neglected; and, in general, a more intelligent and independent set of yeomanry be diffused over the country. But it is no uncommon thing in Galloway for one farmer to hold in lease two, three, or more pretty large farms, lying often at a considerable distance from one another, and all well adapted for tillage. In this case much good arable land is unnecessarily converted into pasturage, the improvement of the lands neglected, or the operations of husbandry carried on in a careless and slovenly manner: not to mention that the independent population of the country will, by this means, be diminished: though this last assertion, we are aware, will be considered as doubtful.

In some parts of the district, sixty or eighty acres are still considered as a well sized farm: and a few proprietors, with a view to raise their rental, have broken down large farms even into much smaller divisions, consisting of ten, twenty, or thirty acres. As for such farms there is always a sufficient number of competitors, they are commonly let at an extravagant rent: yet it may be presumed the proprietors will not ultimately attain their object.

object. For a little while improvement goes briskly on: but the produce of the small possession is barely sufficient to maintain its industrious occupier. If he betakes himself to another employment, his farm is neglected: if he has none, his improvements are soon exhausted and his capital sunk. He overcrops to pay his rent and procure a subsistence; till, in a few years, he and his farm both exhibit the forlorn aspect of penury and wretchedness.

It is only for reclaiming a piece of waste land, or in the neighbourhood of towns and villages, for the accommodation of such as have other resources for the payment of their rents, that such a practice can be of advantage, either to proprietors or possessors. In every other case it is bad.

SECT. II.—RENT.

The highest rent of any farm in Galloway, of considerable extent, and allowed to be kept in tillage, is L. 4 : 4s. per acre. Some grazing farms, of fine old croft lands, are let for L. 3 : 10s. and are presumed to be nearly as valuable, even to the tenant, in pasture as they would be if he were allowed the privilege of cropping them. The average value of the whole arable lands in the district may be about 17s. or 18s. per acre. The average rent of such lands will, however, fall short of this; much of it being under old leases.

One moor farm of 6000 acres is let, on a sub-set, at sixpence per acre. The rent drawn by the proprietor is only one-third, or twopence per acre. The large mountainous and coarse moor farms, average from 1s. to 1s. 6d. per acre. On such farms, which are allotted chiefly to sheep stock, from 2s. to 3s. yearly is estimated for grazing a sheep. This will appear a trifling sum to those who do not calculate the loss and hazard to which stock on such lands is always liable.

From the account which has been given of the extremes, the value of the intermediate lands, consisting partly of arable, and partly of pasturage, and stocked in various proportions with sheep and black cattle, may be pretty accurately ascertained without going into a minuter detail.

In Wigtonshire, one farmer pays L. 2000 of rent. A few from L. 500 to L. 1000. About one-half of the county is occupied by farmers who do not pay more than L. 100 of yearly rent: and of these, by far the greater part do not pay L. 50.

In the Stewartry, there are no farmers who pay more than L. 1000 of yearly rent: though there are a great number who pay from L. 500 to L. 1000. Much more than one-half of the county is rented by farmers of L. 100 a-year and upwards; but, in some districts, the number of small tenants renting farms under L. 50 is also very considerable.

The Reporter has observed in this district, and it probably holds true in every other, that examples of good farming are far more generally to be found among those who farm to a pretty large extent than among the smaller tenantry.

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From L. 200 to L. 400 of rent would be accounted a middle-sized farm in Galloway: though, in some of the districts mentioned, this would be esteemed a very large one.

It is of some importance to enquire, what size of farms is best adapted to promote the interests of agriculture, or general prosperity of the country. On this abstract and doubtful subject, very different opinions have been, and still are, entertained. To treat the subject with accuracy, it is necessary to premise what are the objects wished to be attained. While the feudal government subsisted in Scotland, the chief object aimed at, both by the great proprietors, and those who held lands in fief from them, was always to increase the number of their military retainers. Hence their estates were parcelled out into small farms, as the means best calculated to promote an extensive population upon them, subject at all times to the controul, and prepared to espouse the quarrels of their masters. The pecuniary returns which landlords expected were very inconsiderable—a small part of the produce of the farm with their personal services when required, forming almost the only stipulation for occupancy. This, doubtless, was the chief cause of a population which seems almost incredible in times so unsettled, and when commerce or manufactures were nearly unknown. It may also account for the extensive tillage, under a very rude system of agriculture, the traces of which are still to be found in many parts of the country.

The effects of this system long remained after the system itself was overturned. The character of landlords, the habits of the peasantry, the redundant popu-

lation, and general poverty of the country prevented the annexation of farms no less than the want of knowledge to prosecute better plans of management. The influence of these different causes probably continued longer in Galloway than in any other part of the kingdom, the Highlands excepted. Traces of them are still to be found in some parts of the district.

But causes of a different kind have contributed to diminish the size of farms; the idea entertained by proprietors that their lands would be better cultivated, and that they would bring greater pecuniary returns under such a mode of management. We have seen nothing, however, to justify the practice, either from considerations of private interest or public advantage. If an overflowing population constitutes the wealth and strength of a state—in a country which has no commerce or manufactures, and no convenient means of exporting its disposeable produce, small farms appear to be most advantageous, as they employ the greatest number of labourers, and produce the greatest quantity of human food. But we have much reason to apprehend that an overflowing population is not always to be regarded as a test of national prosperity: and that the increase occasioned under such a mistaken system of political œconomy, in a country where commerce and manufactures do not afford a sufficient drain for the excess, would soon terminate in the greatest of all national misfortunes, an accumulated, but degraded population, without resources for employment, or means of subsistence.

Moderate sized farms are, therefore, best adapted to the greatest of all national objects, such a numerous and independent population as the stimulated industry of

of the country can maintain. As skill, capital, and industry, the indispensible requisites to good management, must be various, such farms cannot be defined by a certain number of acres, or any specific sum of annual rent. The largest size of a farm we apprehend ought not to extend beyond what the corporeal exertions of one man can superintend. We use the term corporeal in contradistinction to mental. Theorists may write systems of agriculture by which very large concerns may be conducted by the direction of one person: but as personal interest always stimulates to the greatest exertions, and guards most effectually against waste or unprofitable expenditure, something, it is evident, must be lost to the community, if farming capital is entrusted to less interested employers. Agriculture will not, like manufactures, admit of a minute division of labour, or afford regular employment in the same species of labour to any one farm servant, a carter or ploughman excepted, beyond a certain period. The sower must also occasionally handle the scythe and sickle, and put his hand to many other branches of labour, or remain idle the greatest part of the year. Dykers, hedgers, and ditchers, like artisans, ought to form a class, as they commonly do, separate and distinct from farm servants.

If the farm, however, is too small to admit of proper inclosures and regular rotations of crops,—to support the expences of all the necessary implements of husbandry, and to afford constant employment to more than one servant, and one team of horses, it evidently can neither be managed to so good purpose, nor with so little expence, as when a larger scale is adopted. The line must somewhere be drawn to check monopoly

on the one hand, by which less corn would be produced, and population diminished; and on the other, to prevent a rude and imperfect system of agriculture which almost invariably results from farming on too contracted a scale. We have stated the boundaries which appear to us to mark the two extremes: between these a large intermediate space presents itself to regulate the size of farms, as skill, capital and industry, or other circumstances shall direct. When farming is not followed as a separate profession, or when the possessor of land works constantly as a common labourer, no criterion can be laid down.

The stock of farms in the arable districts of Galloway, with the implements of husbandry, may be computed on an average at three times the rent; and in moor and mountainous farms, at about four and a half or from four to five times the rent.

SECT. III.—CHARACTER OF FARMERS.

Local circumstances, like professional habits, have often no small influence in forming the general character of men. Hence in different districts, even among those of the same profession, a striking diversity of character will frequently appear. In Galloway, pasturage is every where more or less combined with agriculture, except in the high mountainous region, where no

no grain of any kind is produced. There are not perhaps, above four or five parishes in Galloway where a sufficiency of grain is not raised to subsist the inhabitants; and perhaps not more than four or five farms in it, solely appropriated to tillage. The different quality of pasture lands, as well as the different proportions in which farms are arable, have led to a different management. In the higher district of the Stewartry, and in general throughout the Shire, more cattle are bred than suffice to stock the farms, till they are fit for the English market: whilst, in the other parts of Galloway, it is considered to be more profitable to buy in young cattle than to keep a large breeding stock. From this combination of circumstances, has arisen a marked peculiarity in the character of the Galloway farmers. The greatest part of them are also *dealers in cattle.* The propriety of transferring cattle from one farm to another occasionally cannot be disputed. The farmers are seldom, however, contented with such transfers as might be expedient; but buy and sell continually without any other object than the prospect of a good bargain. Some of them seldom keep a bullock more than a year, or when markets are brisk, perhaps not more than a few weeks or months in their possession. With some remarkably good judges (and many of them are so) this has succeded in a great degree. Not a few of the most opulent farmers in Galloway have been indebted for their success to their skill in cattle, and superior address in making their bargains. The money thus gained comes all, however, out of the pockets of their less skilful or more unwary neighbours, who would always find their interest in less frequent transfers.—But the success

cess of a few capital *jobbers** tempts others to embark in the same trade, though with neither the talents nor resources necessary for carrying it on. In truth it possesses all the fascinations of the gaming table. The fluctuation and uncertainty of markets, the sudden gains and losses which follow, the idea of skill and dexterity requisite, and even the very risk connected with the business, are all calculated to excite the strong passions of the mind, and to attach the cattle-dealer, like the gambler, to his profession; although he may be certain that he is pursuing the road which will lead him to ruin. He counts his gains, but seldom calculates his losses: and even after a long series of bad luck, still foolishly hopes by a few successful adventures to retrieve the desperate condition of his affairs. The certain loss, or ultimate ruin, to the individual, in nine cases out of ten, and on the whole, the great detriment to the interests of agriculture and bad effects to the community, are too obvious to require much illustration.

The natural and inevitable consequence of this *mania* for cattle dealing is, that the farmers are constant attendants on fairs and markets, whether they have any thing to do or not. It is a matter of so much consequence to

* As the terms Jobbers, Drovers, and Cattle-dealers will occur repeatedly in the course of this work, and may not be generally understood, it seems proper to define their meaning. Jobbers are the middle men between the breeders and the graziers, or between one grazier and another in the same, or in neighbouring districts. Drovers are the middle men between the Galloway and English graziers. Cattle-dealers are applied to both, but more commonly to the Jobbers, and sometimes to the farmers and graziers who partially embark in the trade.

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be acquainted with the state of the markets, that every thing must be sacrificed to it. One or two days a week are often devoted to this purpose. On receiving intelligence of a rise on the prices of cattle, one or two besides must be employed to speculate in buying a few more beasts, although the farm is already overstocked. In consequence of this wandering after markets, and traversing the country to make bargains, the business of the farmer at home must be unavoidably neglected. That accurate attention to minutiæ, on which so much of the good management of a farm depends—that order and regularity so indispensibly necessary, are quite incompatible with such habits. But this is not all. Serious expences, far above their profits, are incurred; habits of dissipation are contracted; frequently every moral principle is destroyed; and they become at last unqualified for any business or employment whatever.

Although this, in too many instances, has been realized, yet let it not be understood that it is intended as a general character of the Galloway farmers. It cannot, I apprehend, be improper in a work which may fall into the hands of many of them, to point out the obvious tendency of a practice, too generally prevalent, and the bad effects arising from it, of which they seem not to be sufficiently aware. Many, without doubt, manage their farms well who are obliged occasionally to deal in cattle: but if the Galloway farmers in general, who are unquestionably an active and intelligent set of men, have not made the same improvements in agriculture with those of some other districts, it must be ascribed chiefly to their incorrigible propensity to dealing in cattle; and the evil will not perhaps be remedied

medied till it become more the practice to breed and keep a regular stock on the generality of farms.

Farmers Capital.

Many of the farmers in this district possess considerable capitals, and some of these have raised themselves from small beginnings. But there is not perhaps an instance of any one acquiring, even in the course of a long and successful application to this branch of busisiness, such an ample fortune as is often realized in other professions. The farmer must, in general, content himself with a decent competence: and in Galloway, unless it is his own fault, he seldom fails of attaining it. A very few possess, in stock, or in lands of their own purchase, from L.6000 to L.12,000. Those who possess from L.2000 to L.5000 are reckoned very opulent farmers. In general it is considered to be requisite that a farmer should have a free stock* upon his farm; though there are many who, accustomed to habits of frugality and industry, have, from much smaller beginnings, soon raised themselves to independence. Those whose leases have lately commenced appear to struggle with greater difficulties, and must use greater exertions, than at former periods. The same observation, it is true, has been made at *all* times: but the

* It is by no means to be understood that the Galloway farmers do in general possess a free stock, or that the farming capital over the whole district is nearly equal to the whole value of the farm stock and implements of husbandry. It would be much nearer the truth to estimate it at one half; though we have not sufficient data to make an accurate calculation.

great

great increase of rent, the severe and unequal pressure of the income tax, the rapid advance on the price of labour, and on other incidental expences, whilst few of the articles of produce have advanced in a ratio corre-responding, will probably justify its application to the present time.

SECT. IV.—LEASES.

The ordinary currency of leases is nineteen years: and by far the greatest part of the lands in Galloway are let for this period. Some proprietors give twenty-one years. The late Earl of Galloway superadded to this the tenant's life time. From this two good effects were supposed to result; 1st, That the landlord was freed from the expences of buildings and repairs. 2dly, That the tenant presuming (as men always do) on the continuance of life, would be disposed to go on with his improvements to the last. There is, certainly, however, much liberality in the idea. It must add not a little to the comfort of the tenant to be thus secured in the possession of his farm; and under a proper selection of tenants, it would also contribute much to the improvement of the country: but its good effects are totally counteracted by the pernicious practice connected with it, of letting by auction all lands to the highest bidder. No proprietor, it is believed, now grants a lease for more than than twenty-one years.

A great many proprietors, impressed with the idea that lands will always rise, as they have done, shorten the

the term of leases to fifteen, twelve, or even to six or seven years. In this, perhaps, they do not consult their interest so much as they imagine. For to say nothing of the unavoidable expences in buildings and repairs, which they so frequently incur, such farms, in spite of of every restriction, will never be well managed. And, if on the expiration of a lease, the highest offerer is preferred, the comfort of the tenant must be undermined, and the mutual attachment betwixt him and his landlord, which, with a good man, will always have some weight, will be thus totally destroyed. It is evident that nothing would so much contribute to the improvement of lands, and also of the morals of the peasantry, as a proper selection of good tenants, and a generous preference by the landlord of such as are entitled to it by their good conduct. A few of the respectable landlords in Galloway have long acted on this liberal principle: and doubtless derive more satisfaction from seeing on their estates an active, intelligent, industrious tenantry, in easy circumstances, and attached to them by esteem and gratitude, than from reckoning on a very considerable addition on their rent-roll.

It has been remarked, that cheap leases operate as a bar to the improvement of lands, by destroying the necessary stimulus to industry and exertion. Not unfrequently, perhaps, they have done so: but the opposite extreme will more certainly produce the same effect, by destroying the means of improvement.

The term of entry to farms is commonly at Whitsunday—sometimes at Martinmas, very seldom at any other period. If the entry is at Whitsunday, the former tenant is entitled to the outgoing crop.

Rents

Rents are made payable termly at Whitsunday and Martinmas. An indulgence is usually granted of a month or two after the terms of payment.

Rents are paid in money, and servitude formerly common in Galloway, are now, except on a very few estates, abolished. In former times it was also common to pay a certaiu proportion of the rent in grain, or other produce of the farm. This practice has lately been revived in a very few instances. The *ipsa corpora* are not, however, demanded by the landlord, but the money price of the quantity of grain specified in the lease, which is to be regulated by the fiars of the county. This is an equitable provision to prevent, in some measure, either landlord or tenant from suffering from the fluctuating prices of grain.

CHAP.

CHAP. VI.

INCLOSING.

GALLOWAY, in almost every part, is an inclosed country. Though the practice of enclosing began pretty early, and has been very generally followed, yet the country cannot be said to be very well enclosed. The march dykes of farms are, in general, good; but the subdivision fences appear to have been placed rather by accident than design, and are often as badly executed as they are injudiciously planned. This is not to be wondered at if we consider the rude and imperfect state of husbandry, the injudicious management of farms, and the little attention given by proprietors to the improvement of their estates for a long time after the period when inclosing commenced. The subdivision dykes appear to have been erected by the occupiers of farms one after another, merely to answer the purpose of immediate accommodation; are seldom adapted to carry on a good rotation of husbandry; and often so injudiciously placed as

as to subject the farmers to much inconvenience in cultivating their fields. The improper sizes and irregular figures of farms, and especially the great expence of renewing the dykes, and altering the form of inclosures, render it extremely difficult to remedy these inconveniences. Yet proper inclosures are now known to be of so much importance, indeed so indispensably necessary to the proper management of a farm, that in most cases it would be the interest of the proprietor and tenant, conjunctly, or severally, to begin a radical reform, and gradually to carry on a proper system of inclosing, adapted to the present improved system of husbandry.

The dykes in Galloway are very different in the moors, and in the low country; and are, in general, planned with more judgement, and better executed, in the former district than in the latter. In the moor country inclosing comprizes chiefly two objects: 1st, To divide farms from each other by what are termed *march dykes*: 2dly, To separate the high lands, intended almost solely for summer pastures, from the low lands of the farm containing all the meadow grounds, the small scraps of arable, and a large portion of pasture lands, intended to be saved in summer, to afford a fresh supply of grass both for sheep and black cattle, during the storms of winter. These are termed *head dykes;* and these, as well as the march dykes, being intended as fences for the most active breed of sheep, are commonly built seven quarters, or about five feet ten inches high; which is found to answer the purpose extremely well. In every moor farm, it is likewise considered to be an essential requisite to have a good *tup park*, which serves, also, for various important purposes, at the different

seasons of the year, when it is not necessary to separate the rams from the ewes. Most of the moor farms in Galloway are now well provided with such dykes; and many of them with a great number of small division dykes, which fall under the same description with the dykes of the low country.

For a long time, the only circumstance that seems to have been attended to in the low country, was to make parks to confine and separate the cattle, and to have a supply of water in each. Executed for the most part by the tenant, sometimes with a small allowance in money from the proprietor; *durability, neatness,* or the complete improvement of the farm were never consulted. Temporary convenience was all they had in view. If the dykes served for a fence to black cattle, and would last till the expiration of the lease, the object was completely attained. Hence they have been built universally on too small a scale. The inconvenience of this, as far as it respects old dykes, is of little consequence, since, on the present improved system of farming, it is necessary to rebuild most of these in new situations; but, what may appear extraordinary, many of the new dykes are built on the same contracted scale.—This circumstance has, perhaps, materially contributed to prevent the introduction and proper management of a sheep stock along with black cattle, which, it is believed, might be done with advantage, to a much greater extent than has yet taken place in the low lands of Galloway. Imperfect and injudicious as these inclosures are, yet the advantages resulting from them have been such as can leave no room to doubt that they form a material improvement; and that this species of improvement, for

which Galloway is peculiarly adapted, ought to be carried much farther than hitherto has been effected.

It would not be too much to say, that most farms in Galloway, where proper inclosures have been made, are thereby increased one-fourth, one-third, or, perhaps, in some instances, one-half in their value. Of this the farmers were so well convinced, that, for want of better fences, they had recourse to turf dykes, coped with furze or bramble, which they are obliged to renew every year, to the great interruption of their other labours, and material injury of the ground adjacent. These have very properly been relinquished. In the Shire, a sort of fences very similar to these are still common. They are built with turf to the height of four or five feet. Along the top, and on both sides, the seeds of furze, or the young plants are lodged; which, in a year or two, form a pretty good hedge, and afford excellent shelter. When attention is paid to cut them frequently, and repair breaches occasioned by the rubbing of the cattle, they continue a long time; but are by no means comparable to good thorn hedges, or stone dykes.

But by far the greatest part of the fences, both in the Shire and Stewartry, are dry stone walls, or dykes, for the building of which the workmen of this country are so remarkable, that walls of that kind are known through the greatest part of Scotland by the name of *Galloway dykes.*

Of the varieties of Galloway dykes, such only shall be noticed as appear to be judicious. The most common in the lower part of the country, are what are called, *snap*, or *snap-topped dykes.* These are, for the most

part built two-thirds, or three-fourths of their height double; *i. e.* the two sides are formed of two different sets of stones, resting against each other, and connected together by stones, which, from time to time, are laid across the dyke. On the top of this double dyke a set of long stones are laid horizontally across the dyke, projecting a little on each side; and above these the remainder is built single, which, from the irregular figure of the stones, leaves apertures through which the light appears.

Dykes are built from fifty inches to six feet high. In the low country they are commonly about fifty-four inches, which will, for a few years, afford a sufficient fence for black cattle. These ought, however, seldom to be less than sixty inches; when they would also be a fence for horses, and the different breeds of sheep reared in this district. A few inches deducted from the height of a dike is most injudicious œconomy. The farmer is obliged to fetter his horses when at pasture; his crops are destroyed; his sheep trespass; and the dykes, though almost new, must be repaired every season, on account of the dilapidations made by the inroads of the cattle. Nothing can place the mistaken œconomy of such a practice in a more striking light than the means employed to remedy the evil. The farmer is obliged every season to devote many days labour to cope his dykes with whins, or to strew whins along the sides of them, to the great injury both of the dykes and of his pastures.

The *thickness* of the dyke, and proportion of it built double, ought to be regulated not only by its height, but also by the size and quality of the stones. For a

dyke

dyke of of sixty inches, where the stones are of a moderate size, twenty-eight inches is a proper width at the grass, leaving a *scarcement* * of two inches on each side when the first row of stones is laid. From this the dyke contracts equally till it is levelled for the coping; when (if three-fourths are built double) the width is reduced to sixteen inches. When the stones are large, and very good, the width of the dyke should be a little increased, and the proportion of double diminished. But it is a much better plan, where a considerable proportion of the stones are large, to build snecks of single dyke, at intervals of three yards, or else to encrease the number of *through-bands* in every part of the double dyke; and by no means to overload the coping, as is often done, with large projecting stones, which, if not made to project with the greatest exactness, or if the dyke, from any cause, should sink unequally, must infallibly occasion terrible breaches in it. When the stones are small, the dyke should be proportionally narrowed, to make the two sides connect more firmly, and afford more *overlaps*. Oftentimes the stones are so small that only a row or two can be obtained for coping on the top.

When the stones are good, one-half of the dyke is sometimes built single: but it is a practice which ought rarely to be admitted. It is too much the practice to huddle together the stones in a careless manner in the upper part of the dyke. It ought never to be so. Much of the durability of a dyke depends on levelling the double accurately, laying the first coping stones in such a manner that they may rest firmly and press equal-

* That part which projects when the dyke is suddenly contracted.

ly upon it, and making those above to wedge nicely and balance exactly, so that the centre of gravity may always be in the middle of the dyke. On the top none but stones of a good size ought to be admitted, and these laid with so much care that the workman may boast, as he sometimes does, that a man may wheel a barrow along the top of his dyke without shaking a stone. This is a boast, however, of which those only can see the force who are acquainted with the extreme irregularity which the stones of this country take, even from the most skilful application of the hammer.

In pursuance of this idea of making the top as firm as possible, the late John M'Adam, Esq. of Craigenguillen*, about

* Mr M'Adam built perhaps more stone dykes and of better quality than any man in Scotland at that period. Besides the improvement of locked tops, he invented also *snecks* or *hudds*, i. e. spaces built single at short intervals: a very useful contrivance: for if any accident happen to a part of the dyke, these snecks prevent the evil from spreading far. In other respects the workmanship was excellent. They were mostly executed under the direction of a confidential servant who had spent a long life in the business, and well knew to detect any roguery or carelessness in dykers. Many of them have stood upwards of sixty years almost without a single breach. The cost in building is about one-third more than the stated prices of the common dykes of the country of the same dimensions.

We have been favoured with the following account of Mr M'Adam's dykes from one of his tenants who has many of them on his farm.

"They are commonly about five feet ten inches high. The foundation is made level with the spade where it was not so before. They are thirty inches wide at the grass, with two inches of scarcement on each side. If they are built on a declivity, most of the scarcement, or the whole of it is on the lower side of the dyke; and where the ground

about sixty years ago, invented a mode of putting on the top of a dyke, which has obtained the name of a *locked top*. This is made by chusing out a set of broad and flattish stones, which are laid edge-ways on the top of the dyke as close as they can be put together; and when a considerable extent has been thus laid, thin stones are driven in, like wedges, at small intervals, which bind the whole so firmly together, that, when well built, a stone can hardly be taken out of the top without an iron-crow.

There are few operations connected with husbandry, where more depends on the skill, attention and fidelity of the workmen than building of dykes; but few, unfortunately, where the want of these will more easily escape without being detected. It occurs too often that dykes executed with great neatness, and apparently in a very substantial manner, exhibit, in a few years, all the symptoms of decay and ruin; when, however, it is too late to obtain redress from the faithless contractor. Without pretending to expose all the chicanery of the

ground is soft or swampy, the foundation stones are so long as to meet in the middle of the dyke. *Hudds* or *snecks* are built at the distance of two or three ells. One *hudd* stone will do at the grass; but the more the better. When the double dyke between the *hudds* is built as high as the first hudd stone, a stone sufficiently long is placed so that one-half of it may cover the hudd, and the other half the double dyke. In this manner the hudds are connected with the double dyke on both sides till it is two feet five inches high, when the *band stones* are laid on. The dyke is seventeen inches wide at the band stones. The stones immediately above the bands, (termed *gulls*) are so dressed as to lie solid upon them without being supported by small stones or *pinnings*. The locked top is formed of stones not less than ten inches long, so dressed and laid that one cannot be removed without injuring the rest. Where the stones will not admit of dressing, the locked top is dispensed with.

craft, we submit the following observations as very proper to be attended to by every one who is desirous to have good stone dykes.

1*st*, He must take care that the materials are good. Here the dyke-builder, if he contracts for the whole job, has many temptations and various ways of deceiving. The quarries in Galloway often abound with a soft friable schistus, which falls to pieces by the influence of the sun or air. Stones of this sort are easily procured: and the cunning workman, if he dare not risk putting them in the outsides, throws them into the middle of the dyke, where they remain concealed till the falling in, or bulging out, shews of what stuff it is composed. As it is found that small stones go much farther than large ones, the undertaker, to save expences in quarrying and carting, is tempted to shiver them down into small pieces; or, not unfrequently, to content himself with the refuse of old quarries, or trash gathered from the fields, to the ruin of all idea of durability: and provided he can, by the intermixture of a few good ones, save appearances, and get the dyke taken off his hands, he is secretly pleased that the sooner it falls to the ground the better it will be for the profession.

2*dly*, It is essential to the durability of a dyke, that each individual stone be laid on a proper bed, that the stones frequently overlap one another, to *break*, as they term it, but more properly, to *bind* and *connect* the joints along the two rows forming the *double;* and likewise, that the two sides be well bound together by long stones laid across, termed *throughbands*. The more stones there are of this sort, the more substantial will the dyke be; but in case of a scarcity of these, the defect may be

be supplied by laying the stones lengthways across, so as to overlap the middle of the dyke, and interlock with others from the opposite side. Here, however, the dyke-builders are very often tempted to sacrifice real utility to show and their own convenience. The outside of a dyke requires much more labour and attention than inside work. To form, therefore, a considerable part of it with one stone is a great saving, and this induces them to lay all the large and long stones lengthways of the dyke, instead of laying them across as they ought to do. From the same motives of convenience and love of show, if a stone has a fine face, though without an inch of a bed, they prop it up with small stones or *pinnings* to make it stand perpendicular. It very soon, however, falls out, or by its unequal pressure disarranges a large portion of the dyke. It is, doubtless, desireable to have a dyke smooth on the outside to prevent the cattle from rubbing against it, which they would be apt to do were there many projecting points; but it is, in reality, a very immaterial circumstance. As, however, it pleases the eye, conveys the idea of skill and ingenuity, and is therefore very apt to impose on superficial judges; with the workmen it is always a capital object; and if they can only make their work *well skinned* *, they give themselves no concern about its firmness and durability.

3dly, But the most prevalent and incorrigible fault of all, and which ought, therefore, to be chiefly guarded against, is neglecting to build the inside of the dyke. Here the stones ought to be of the same good quality, and laid with the same care and attention as those of the outer faces. But instead of this, by the generality of

* Smooth, flat.

dykers

dykers, a parcel of rubbish is loosely huddled together, filling up very imperfectly the intermediate space, and affording no firm resting place for the throughbands and stones that overlap; so that, in a short time, the two sides either fall together, or large empty spaces are left in the middle of the dyke.

It would exceed the proper limits of this article to enter more minutely into a detail of particulars. From what has been stated, it will appear how necessary it is, in order to have dykes well built, to look very closely after the workmen. So many, indeed, are the modes in which the work may be ill executed, so various the arts of deception, that it admits of a serious doubt, whether it would not be adviseable to give up the present mode of building dykes by the job. To do the work by day's wages would, no doubt, be more expensive; but, perhaps, that expence would be well incurred, from the superior goodness and durability of the work.

When all the essential requisites are attended to, the materials good, the work skilfully and conscientiously executed, and the dykes of proper dimensions, they form excellent and very durable fences; far preferable to the paltry *rickles** so common near Edinburgh, in which lime is trusted to for supplying the defect of proper arrangement of the stones. This is sufficiently proved by the actual duration of many of them. One of these lies along the north side of the old military road from Carlisle to Portpatrick, about a mile or two from Castle Douglass, which was built immediately after the time of the levelling†. In the farm of

* A term in Scotland for dykes slightly built.

† See the chapter on the progress of improvement.

Robert-

Robert-town, in the parish of Borgue, are dykes built before the time of the levellers, which escaped their ravages, and still remain partly good fences. A dyke of still older date is to be seen in the lands of Baldoon, being the march between the farms of Balfern and Stewarton, built by Lord Basil Hamilton, about the end of the seventeenth century. But the dykes most worthy of notice are on the lands of Palgown in Mennigaff, which appear first to have suggested the idea of inclosing moor farms. This estate comprehends a very large tract of mountainous country, containing much very bad land, interspersed, however, with some good pastures, and spots of arable and meadow ground. At a time when inclosures were unknown, it must have appeared like the labours of Hercules, to attempt inclosing such an extent of mountainous country, in some places many miles distant from the habitations of men. This, however, was accomplished about the beginning of last century, and the inclosures still remain, and will perhaps remain longer than this feeble attempt to perpetuate an instance of spirited exertion and persevering industry, which paved the way to many future improvements. The M'Kies of Palgown had for ages farmed the patrimonial estate, and were distinguished for hospitality, and superior activity and intelligence as storemasters. Alexander and Anthony, who had received a very liberal education, and were endowed with good sense, and great activity of mind and of body, preferred the occupation of their ancestors to every other. Enlarged in their ideas far beyond the common peasantry, in those rude times, they formed plans of improvement, which to others would have appeared wild and romantic. To accomplish their purpose they invited a number

ber of people to settle with them, by granting them leases for a few soums of cattle and sheep, on moderate terms, and promising to afford them employment at all seasons, when they could be spared from their own affairs. These industrious hinds, when summer commenced, ascended the mountain with poles, plaids, and blankets, accompanied by their wives and families. In a day or two they erected huts of turf; heath, fur, or rushes furnished them with beds. There they carried on their operations, till the inclemency of the season compelled them to return to the lower regions, where they were employed in inclosing the arable and meadow grounds, when the weather, or their avocations would permit. Working for a while by the day, and not by the job, and superintended and directed by their intelligent masters, they soon acquired a high degree of skill, and executed their work in a manner which has rarely been surpassed. In a few years the arduous undertaking was finished; and the advantages arising from it were such as soon after induced many both in the high and low country to imitate the example. These dykes, from their remote situation, escaped the levellers. Some of them have still escaped the ravages of time.

Some have already completed a century; there are others on which, to all appearance, centuries to come will make no impression. It is much to be feared, however, that very few of the present race of dykers will leave such lasting monuments of their skill.

The expence of Galloway dykes varies much, with the ease or difficulty of procuring stones. At an average for a dyke of 60 inches, it may be stated as follows: To quarrying stones per rood, 2s., carting 2s. 6d., building

ing 2s. In the moors where the stones are good, and a large proportion built single, a dyke of 5 feet 10 inches is built for 2s. The locked topped dykes, if built in other respects, as has been described, cost 3s. or 3s. 6d.

The duration of dykes is nearly as variable as the term of human life: very few of them, however, arrive at longevity. Commonly after twenty or thirty years, it is more œconomical to rebuild them entirely, than to make temporary repairs. It would, certainly, be a judicious plan in contracting for building either dykes or houses, to oblige the contracter to be responsible for the work at the end of six or seven years. If in the course of this period no great flaws or blemishes are discovered, they will seldom fail to prove very durable. At any rate, this would prove a good check to careless and insufficient workmanship.

Hedges.

In the district along the Nith, *hedges* appear to have been used as fences at a pretty early period. They now begin to be common in many other parts of the country. As the practice of draining wet, and improving waste lands daily increases; it may be expected that they will become gradually more prevalent, and contribute much to the improvement of the country. Unfortunately an opinion is too generally entertained, that they can only be reared in soils naturally good, and the errors committed in attempting to rear them on bad soils, and often, too, on good ones, have tended to confirm it. There is, however, scarcely any soil on which, with proper

proper attention, and at no great expence, good thorn hedges may not be raised. A few instances are to be found in Galloway, which will justify the truth of this remark; if it shall not appear evident from what follows.

Hedges should never be planted without ditches of six feet wide, and three, or three and a half deep, to fence the young plants from the cattle, which if allowed to brouze upon them, prove certain destruction. As wet soils are unfavourable, they ought to be drained. If a ditch on one side is not sufficient to drain a wet soil, double ditches ought to be adopted. This in every case will effect it. Great care should be taken to preserve all the surface earth to be laid on the roots of the plants, and to a little distance behind them, to encourage the growth of the root fibres. If the soil is of a stiff clay, it should be mixed with other earths, or with more of the adjacent surface soil to pulverize it, otherwise it will form a kind of cement, excluding both the air and moisture so necessary to vegetation. Peat soil, or any other kind of soil unfavourable to the growth of plants, should always be mixed with lime, dung, or other manures; and in general, it would be a very good plan to form such composts a year, or at least six months before the hedge is planted. In a sandy soil, too little retentive of moisture, it will be necessary to collect surface earth, enriched with vegetable mould, or otherwise to form a more retentive compost, and to adapt the mound placed above the thorns for conveying the rain water to their roots.

The additional expence incurred by any of these improvements of the soil, is in reality much less than what

is

is commonly supposed. If the expence of improving an acre of land is estimated at 5l. this, (taking the breadth necessary for raising a hedge at one yard), would give a length of improved soil for a fence amounting to about one mile. The improved soil should not be brought forward to the brow of the ditch, which would promote the growth of weeds. To prevent this, a part of the surface should be pared off, and in most cases, the plants should be laid on the surface where the decaying vegetables would serve as a kind of manure. It is a very great, but common error, to plant the thorns when they are too small. For three or four years, they ought to be carefully hoed or hand-weeded twice a year, the vacancies supplied, and the cattle should on no account be suffered to brouze upon them. It is a good practice in a naked country, to plant forest trees among the thorns; care being taken to chuse such as may least injure their growth. The expence of making a hedge and ditch is about 3s. per rood. It would not perhaps be too much to say, that from mismanagement, one half of the hedges in Galloway do not afford complete fences; which defect a small degree of attention might have prevented.

Sunk Fences.

Another species of fence is now very prevalent in those parts of the country where good stones are not easily procured, and bids fair in such places to supplant the Galloway dykes. It is a combination of a hedge and a dyke. A broad and shallow ditch being dug, and the earth thrown back, a clear space is left, which ought to be at least 16 or 18 inches from the face

face of unstirred earth, on which the stone dyke is to be erected. The face of the dyke should approach nearer to the perpendicular than in common stone dykes. When it is built to a level with the surface of the unstirred earth; the thorns are put in, which require to be very long, to have a proper bed in the earth behind. The back part of the dyke, as well as the outer face, ought to be carefully built, and by no means filled up with loose stones or earth, which, being expanded by the frost, bursts the dyke, or gradually washed away with the rains, allows it to sink and fall back. If this is attended to in building the lower part of the dyke, a *little* earth may be laid where the thorns are placed, to prevent their being injured by the stones; this ought not, however, to be brought forward on the dyke, as it would encourage the growth of weeds so pernicious to hedges. The upper part of the dyke is then built; care being taken to place the stones, so that the plants may lie in the intervals left by the irregular shape of the stones. The dyke when built to the proper height, (commonly 54 inches) should be finished with a locked top. It is usual to place the thorns at shorter intervals from each other than in common hedges, as vacaucies cannot be so easily supplied, but it is much better to make use of none but good plants, and to guard against every circumstance which might occasion them to decay.

Six inches appears to us to be the proper distance between the thorns. Many prefer planting them 4 inches distant, from the idea that some of them will not grow. If this should happen, it is a cheaper, and much better plan to supply deficiencies for a year or two with strong plants. Care ought always to be taken to pick out all the

the small plants, and either to plant them in a separate hedge, or return them to the nursery; for nothing will more certainly injure a hedge than planting thorns of unequal sizes together, as the large ones overtop and destroy those of inferior growth. To prevent this, it is proper, further to cut over thorns of a luxuriant growth; the only species of pruning necessary till hedges have attained a proper height.

This species of fence has several advantages. It is cheaper than the common Galloway dykes, where stones are not easily procured, as it does not require above two-thirds of the quantity; and even though ill built, or with stones of an inferior quality, will stand till the thorns make a sufficient fence, so that it needs no repair or renewal. It has this advantage over hedges planted in the common way, that it needs no attention to keep it clean from weeds. It is also a fence from the first; this, however, it is properly on one side only; as an active animal would not find it difficult to leap down from the side on which the bank is sloped off. The cattle, too, are apt from this sloped bank, to browze the young shoots, which injures them very much. To obviate these evils, the inclosed field may be kept in tillage, or a temporary fence erected, till the thorns are out of danger of being injured by the cattle.

This species of hedges is peculiarly proper where a fence is wanted on sloping ground, with the face of the dyke on the lower ground; or on the sides of roads where deep ditches would not be allowed. The expence is commonly about 5s. per rood.

The *sunk fence*, as it is termed, was invented by Mr Hamilton of Baldoon. He made the first trial of them at St Mary's Isle. One of these built about the year 1730, was, a few years ago, in complete preservation, without ever having required a day's work of repair. *His*, however, were the only trials made of this fence, till Mr Heron of Heron, in 1748, inclosed a considerable extent of his lands at Gelston in the same manner. The inclosures also proved excellent and durable. Mr Heron, however, was the only imitator till about the year 1760, when the late Lord Selkirk, observing the great superiority of the one above mentioned at St Mary's Isle, to others of the common kind, built at the same time,—by the same workmen,—and of the same materials, determined to adopt them on a large scale. From that time, they have been gradually coming into common use, are now very prevalent, and still maintain their good character.

CHAP.

CHAP. VII.

IMPIEMENTS.

THE implements of husbandry used in Galloway differ so little from those of other districts, the accounts of which are already before the public, that a particular description of them appears to be unnecessary. The formation of them is not now as formerly committed to rude and ignorant artizans; but to those who are well acquainted with the principles of mechanics, or who have at least acquired much practical skill, and can execute with precision the plans of able designers. Few countries are better provided with good plough and cart weights; and the farmers in general, sensible how much celerity and perfection in labour depend on proper implements, shew a laudable desire to procure all such as are most useful, and of the most approved construction.

The old Scotch plough, but with some improvements, and of neater workmanship, long maintained its reputation, from the idea that the broken stony lands of Gal-

loway were not adapted for any other. But it is now found that ploughs on the model of Small's, with the latest improvements made upon it, answer much better on almost every species of soil; and that the additional expence is more than compensated by durability, independent of the very great advantages arising from superior workmanship. It is proper to mention, that, at some of the ploughing matches in Galloway, ploughs were brought from Roxburghshire, Berwickshire, Northumberland, and other counties, the most celebrated for agriculture. Their respective merits being accurately ascertained; the tradesmen in the country afterwards copied from the most approved models among them, and soon equalled the originals.

Double moulded ploughs, ploughs drawn with one horse, for cleaning turnips, beans and potatoes, scrapers, &c. are only to be met with among a few of the principal farmers. The only trenching ploughs which the reporter had an opportunity of observing belonged to Colonel M'Dowall. These were constructed on the model of the old Scotch plow, but of prodigious strength, and very large dimensions.

Harrows are constructed on various plans, and of different dimensions. Those commonly used, (termed double harrows,) have six bulls, being jointed in the middle, and are drawn by two horses. Instead of mortising the cross bars through the bulls in the common way, some farmers have lately adopted a plan of fixing them on the upper side of the bulls with nuts and screws. By this means the bulls are not weakened by mortising; and if any part of the harrow is damaged, it can easily be repaired. It would still be a further improvement,

improvement, to have the cross bars made of iron or cast metal. Fixing the bars of gates in the same method with nuts and screws, is also frequently practised. A harrow of the same dimensions with the common double harrow, but of a much lighter make, and with small sized teeth, for harrowing in all small seeds, and for destroying seed-weeds in the spring, without injuring the crops when in *braird*, would be of material use. As it might be drawn with a single horse, it would poach the ground less, do as much work in the same time, and to better purpose. This I have not met with, though the old fashioned single harrow is often employed for the above mentioned purposes.

The carts in Galloway may be compared with the best in the kingdom. The good effects of having a superior artist, were early conspicuous in the improved construction of this species of wheel carriages. Soon after their introduction into Galloway, Mr Napier, in Terregles, constructed carts nearly in as great perfection as they have yet any where attained. The celebrity he soon acquired, enabled him to keep a great number of journeymen and apprentices, who profiting by his excellent instructions, and afterwards commencing business on their own account, speedily diffused the knowledge of the art through this and the neighbouring county. The carts now commonly used are neat, and though of a light make, very durable; varying in dimensions according to the size of the horses, usually from 20 feet to a cubic yard in the size of the box, and from 50 to 54 inches in the height of the wheels, which are mounted on iron axle-trees, and almost universally drawn with single horses. Spoked frames fixed on the box of the cart are used for carting peats; and frames of a different

kind termed *shell bands*, are used for carting hay, corn, and other sorts of bulky top loading.

None who has witnessed the great loads which are drawn by single horses, the facility with which they are yoked, loaded and unloaded: the celerity and dispatch with which manures are carted to the field, and hay and corn brought into the barn-yard; and the convenience with which they are adapted for other purposes connected with husbandry, will hesitate for a moment to acknowledge that they are incomparably more useful, (to say nothing of the difference of expence) than the cumbrous unwieldy machines used in many parts of England, and even in some of its most improved districts.

Rollers.—Many of the principal farmers are provided with rollers; though they are by no means common through the district. On the generality of soils they are of opinion that the advantages of rolling will scarcely compensate for the trouble and expence attending it. This probably would be the case where fallowing or the turnip husbandry is used only on a very small scale. Though doubtless it would be of advantage to roll lands sown out with grass when the stones are removed, yet they are commonly found to do very well without it. An idea prevails that it would be very useful to consolidate lands in crop when too loose, and thus prevent the young plants from decaying, which the farmers ascribe to the roots not adhering to the soil. They seem, however, to be mistaken about the cause assigned for this very prevalent evil: or at least the means employed have seldom proved a remedy.

Rollers

Rollers are frequently made of granite; are of very different dimensions, and drawn by one, two, or three horses. They are sometimes made of wood, about three feet diameter, with a box for holding sand upon the top, by which the weight may be increased or diminished at pleasure. These are, in general, much better adapted than stone rollers for the lands of Galloway, the surface of which is very seldom level. For the clayey soils, however, the former are preferable. But the best of all are rollers made of cast metal—about thirty inches diameter and half-an-inch thickness of metal. Only a very few of these have been introduced into this country. Their advantages consist in greater durability than even stone rollers: being of a larger diameter, they are more easily drawn; and the mould, when wet, does not adhere to them. They ought to consist of two pieces to facilitate turning. These cost from L. 14 to L. 18. None of these implements are peculiar to Galloway. The following one is probably not yet known in any other district. A description of it therefore, it is presumed, will be acceptable to the public. For the following account we are indebted to Mr Hannay in Grange, who has used it for two or three years. To those who are acquainted with Mr Hannay, and have seen his excellent management on strong clayey soils, his recommendation of it will be entitled to entire credit.

"A description of the shovelling plough invented by Mr Gladstanes.

"Fig. 1. B the beam, H the head, C the sheath. Fig. 2. L L the stilts. Fig. 5. D D the wrests; which with the two inclined planes (K fig. 3.), one on each side of the beam, are almost exactly similar to the wrests

and mould-boards of a common plough on a large scale. E E E E E E fig. 5. the ribs. The longest of these ribs fig. 4. is made the exact shape the furrows should be, when properly formed; and the other ribs must exactly correspond to it, otherwise the plough will not perform the work neatly. But if the ribs are properly formed, a small mistake in the construction of any other part of the plough will not be of material consequence. The head H, and the two wrests D D see figures 3. & 5.) are shod with plates of sheet-iron, which, being connected together at the point of the head, they form a kind of sock to the plough. The ribs are covered below with boards of hard wood. There are several other parts of minor importance, chiefly intended to strengthen and connect the principal parts of the plough: all which will be understood from the different figures in the plate.

" In ploughing, the two wrests, D D, clear out the loose mould in the bottom of the furrow, and at the same time scrape off any protuberances which had remained on the sides of it. And the loose mould thus raised, is carried up to the inclined planes H (fig. 3.), and gradually falls in below the bottom or covered ribs of the plough as soon as vacancies occur to receive it: and the whole bottom and ribs of the plough being close covered, this loose mould is thereby prevented from returning into the furrow; and the edges of the furrow are formed very neatly: a great deal more so than it is possible to form them with the shovel.

" This plough is commonly drawn by three horses a-breast. One in the centre of the furrow and one on each side. Perhaps it would be better, when the land

is

is wet, to yoke two of the horses in the trace; but this I have never tried. Strangers are apt, at first sight, to be startled at the huge bulk of this plough, and to condemn her as an unwieldy and unmanageable machine; but, on seeing her tried, they will be led to form a different opinion. The draught is by no means severe, except when she is used in cleaning cross cuts; and then, indeed, it is sometimes great; but the work she performs is equally so. Upon the whole, I consider her to be one of the most useful implements of husbandry which has been invented for a long time. Every farmer possessing twenty acres of wet clayey land, would find his interest in having one; to myself, the advantages arising from the use of her, have not been less than from L. 30 to L. 50 annually."

† The account of Mr Gladstanes improvement on the thrashing machine will be given in a subsequent part of the work.

CHAP.

CHAP. VIII.

ARABLE LAND.

SECT. I.—TILLAGE MANAGEMENT.

It will now be convenient to follow up the history of agriculture, by giving an account of its present management in Galloway. It is commonly by slow degrees that any material changes on long established customs pervade a whole district. The fashions of agriculture do not, like many other fashions, find imitators every where, as soon as they are known. On the contrary, among farmers some degree of reluctance appears to prevail in adopting real and even essential improvements, when first introduced by their superiors. The true reason, perhaps, is, that they are seldom willing to allow their superiority of judgment; and, moreover, they believe that gentlemen, in farming, do not very rigidly calculate the expence, whilst they count the

the returns of profit from their improvements. In this they are not always mistaken, as gentlemen often do carry on operations of husbandry in a stile, and at an expence, which would prove ruinous to common farmers. A few good farmers dispersed over a district, who in a frugal, œconomical manner, carry on the best plans of husbandry, will tend more than any other circumstance to infuse life and spirit into the whole body; free them from the trammels of antient prejudice, and excite a spirit of emulation, which is often no less powerful than interest in stimulating to improvement.

Mr Craik's very early exertions for the improvement of agriculture in the Stewartry have already been fully noticed. In Wigtonshire little seems to have been done worthy of notice 'till a much later period. It is true, even before any of the operations of Mr Craik, so early as the year 1732, Marshall Stair had made a few agricultural experiments in reclaiming waste lands, in the cultivation of potatoes, turnips, clover, and even lucern. His attempts, however, were probably regarded as chimerical, and being seconded by no other person, the traces of them in a short time disappeared. The late Earl of Stair, who succeeded the Marshall in the year 1747, made very considerable improvements in reclaiming waste lands. His mode of management was—after sufficiently pulverizing the land by repeated ploughings, to lime, and sow the lands with turnips; and then oats, with artificial grasses. The crops of oats were, however, as might be expected, very poor: but the lands were greatly ameliorated afterwards as pasture. But the essential improvements by drilling, and

and a proper rotation of crops were then altogether unknown.

Mr William Ross, present Collector of the Customs at Stranraer, may therefore, though at a much later period, be considered as the first who set the example of good farming in Wigtonshire. But, as is generally the case in the first stages of improvement, the expence having far exceeded the profits, not many were induced to follow it. Ultimate success, however, having convinced the more intelligent part even of the tenantry that this was a fallacious idea, the spirit of improvement began gradually to extend in that district; and now very many of the farmers, with the bulk of proprietors, in both counties, combine their efforts to abolish the old system, and to introduce better plans of agriculture.

But although the system of agriculture in Galloway has lately received very material improvement, and may, in comparison of what it formerly was, be considered as excellent, yet if compared with that of some other districts, it will still be found in general extremely defective. The barbarous practice of taking three crops of oats on land broken up from grass still prevails in many parts of country. The lands are then laid out to pasture in this impoverished state, but more frequently this is followed with a green crop, or fallow; and they are afterwards sown with barley, or early oats, and a crop of hay is taken before they are left in pasture. Such of the proprietors, however, as pay attention to the improvement of their estates, always restrict the tenants to two white crops before the fallow, or green crop; and many of the more intelligent

gent farmers, without any restrictions on the part of the landlord, now adopt this plan. In a country where agriculture is so much combined with pasturage, and where it is seldom expedient to have more than one-fourth or one-third of the arable land in crops of any kind, this practice ought not perhaps to be condemned. Lands which have remained in pasturage for eight or nine years, are seldom sufficiently pulverized with less than two white crops to prepare them for a green crop; and if laid out in a good state, usually pay better in pasture, than by cropping to a greater extent. Where this, however, is intended, the farmer sometimes after a crop of hay, plows down the clover stubble either for barley or oats. The best method of doing this appears to be, when the second crop of clover has attained its full growth in autumn, to pasture upon it a large number of cattle for a short time, and soon after to plough it down; which seldom fails to insure a good crop. It has a tendency to clean the ground of weeds, and the manure it thus receives from the clover stubble, in some degree counterbalances the effects of an additional crop. The advantages resulting from this, have led to another practice, which, in some farms, even where a moderate portion of tillage is allowed, may answer extremely well:—to restrict, for a series of years, the whole tillage of the farm to one particular part of it; which is always kept under a proper rotation of white and green crops, whilst the rest of the farm is kept constantly in pasture. Many of the arable farms in Galloway are so broken, that it is difficult to find more than a few fields which are well adapted for tillage: many have a soil of so fine a quality, that merely with a top dressing of calcareous manures, they become not inferior to real croft lands; which

which are always injured by breaking up, unless when they are overgrown with fog or moss. In such cases the plan above mentioned appears to be expedient; particularly if the portion allotted for tillage is of a strong deep soil. It will also save expence in inclosing, as there is little occasion for subdivision fences for the different breaks. But it will appear obvious, that this cannot be recommended as a general practice. It has not yet been acted upon for a sufficient length of time to determine, whether, in moderately light soils, the crops can always be preserved equally good as in the common rotations. No inconvenience, however, can result from the experiment, as the lands in tillage from being frequently manured, will pasture better when laid out in grass, and the pasture lands will also from the long rest, be improved for cropping when again converted into tillage.

This mode of management can only be adopted with propriety upon those farms, where the whole arable land has been improved by calcarious manures and meliorating crops, and laid out to pasture in good condition. The second course of cropping after such manures, with the inferior management too often adopted in Galloway, commonly leaves the farm impoverished. But when the tillage is restricted to one spot, with a proper rotation of crops, the farmers will be compelled to resort to better management: and having thus served an apprenticeship to an improved mode of culture, may afterwards be properly permitted to carry the same management gradually over the whole farm.

In the parishes of Kirkbean, Newabbey, Troquer, Terriggles, and part of Irongray, one-half or one-third

of the arable lands are usually kept in tillage, and various rotations are observed. The farmers in general *talk* of white and green crops, or fallow, alternately; but few, it is believed, steadfastly adhere to this approved system of husbandry.

A few farmers on the Baldoon estate,—on the banks of the Cree,—and in some other places, where the lands are of a strong clayey soil, crop to a still greater extent, and have lately adopted plans similar to those which have long been followed in the Carse of Gowrie, and other highly improved districts. The tillage is extended as far as their manures will allow; and no means are neglected, by the use of straw yards, composts, &c. to increase these as much as possible.

SECT. II.—PLOUGHING.

The tillage in Galloway varies exceedingly. Where the land is not broken, the fields are commonly laid off in a neat stile, the ridges are equally sized, the furrows drawn in straight and parallel lines, and the whole business executed in a workman-like manner. If, in other parts of the country, it still appears to be very defective, this ought to be ascribed as much to the ruggedness of the grounds, as to want of skill and dexterity in the ploughmen: for through the greatest part of Galloway, there are impediments to neatness of tillage, which are met with in few other countries. The knolls, and unarable grounds, present themselves in so many different

different directions, as must often baffle human ingenuity to follow out any thing like a regular plan, or to display much neatness in the execution.

The old farmers appear to have studied, as much as possible, to procure a convenient length of furrow; and to accomplish this, without interfering with the unarable lands, they formed their ridges on plans which, to a stranger, would appear very whimsical and capricious. They do not appear, however, to have calculated the loss and inconvenience to which they were subjected, in every operation, from the ridges varying perpetually in width, and continually changing their direction. And what seems still more unaccountable, the same predilection for spiral lines, unequal ridges, and imitation of nature in all her wildness and variety, seems to have directed their operations, even in smooth unbroken fields, where no obstructions occurred. This may, in fact, however, be easily accounted for from mechanical principles, and was therefore at no distant period common in every part of the kingdom. The ploughmen, everywhere, now find it expedient to make a total change in the practice; and study, as far as possible, to make the ridges straight and equal, even where this interferes with unarable knolls. Some are at a good deal of pains to bring these unarable spots into cultivation; and where they are few, or of small extent, their labour is judiciously bestowed, even although the crop should not repay the expence of seed and labour; for these, when neglected, become receptacles for weeds, which extend their roots, and scatter their seeds, so as often to pollute the whole adjacent field. Where it would be unprofitable to bring them into cultivation, they ought to be cleared

cleared of weeds with the same care as the land in tillage. This, however, is commonly neglected.

Though the tillage of the country is still very far from being uniformly good; yet it is everywhere in a progressive state of improvement. The coarse unmanageable ploughs, the tribe of miserable half-starved animals, yoked four, or six together in a team, the bungling awkward race of ploughmen, two or three of whom always attended one plough, are now no where to be seen in Galloway. Two horses usually form the plough-team; and in tough leys, where three or four are sometimes necessary, the ploughman seldom requires any assistant.

Ploughing matches, which have been instituted in different parts of the country, appear to have excited a very laudable spirit of emulation. On these occasions a great number of competitors always appear. Ploughs are procured of the most approved construction, and the comparative excellence of the ploughs, as well as the respective merits of the competitors, are ascertained with the greatest precision. It might, perhaps, have a still better effect, if inspectors were appointed for different districts of the country, to examine the general work of the season, and allot premiums to such as had given proofs of their superior diligence as well as skill.

There is more reason to complain of the quantity of work performed, than of the mode of execution. In winter, half an acre of land is thought to be a good day's work: and, in broken ley land, this often does not exceed one-fourth. Twenty-five or thirty acres is the ordinary tillage of a pair of horses for the

season in the bulk of farms: in those which are least broken, it rarely amounts to forty; * yet the horses in general are good; but an injudicious œconomy too often prevails in feeding them. They are commonly fed on straw through winter; with a small quantity of oats in the morning, and a few potatoes at night. After Candlemas, they receive hay in place of straw, and have an additional feed of oats at mid-day. They are turned out to pasture about the middle of May, and often remain at grass till the end of November.

Many of the farmers now begin to adopt a better plan of management. They give them hay in place of straw for winter fodder; and instead of pasturing them in summer, feed them with cut grass, or turn them out only for a short period. The advantages of this are so obvious, that it appears strange it should not be more generally adopted. They are fed at one half of the expence: the value of their manure is doubled; they thrive as well, and are always at hand when wanted.

The quantity of oats consumed by a work-horse varies from fifteen to twenty-five bushels, if good oats are given; but as *draughts* † are commonly given the quantity is proportionally increased.

The total expence of keeping a work-horse, may be estimated as follows, viz.

* Ploughing is sometimes interrupted by other labours.

† The light oats separated with the chaff in cleaning.

Grass

Grass for six months	L. 5
Hay for three months	2
Straw for ditto	1
Oats and potatoes for six months .	3
	13

A reduction of two pounds might be obtained by feeding with cut grass for four months.

Though this is given as the average expence of feeding horses through the district; yet there are some farmers who, in the article of oats, rate their expenditure at from fifty to sixty bushels, and believe that they find their interest in doing so, from the additional quantity of labour performed. Scanty as the allowance, on the whole, may appear, the horses are, for the most part, kept in excellent condition, and not suffered to fall off much in strength and appearance, even when great exertions are unavoidable.

SECT. III.—FALLOWING.

Fallowing, which appears to be the simplest of all the operations of husbandry, is, by a majority of farmers, unskilfully conducted. It is indeed practiced by the generality, only on a very small scale; and more, perhaps, in conformity to a stipulation in their leases, than from a conviction of its usefulness. Or, if they are convinced, from observation, that it is really beneficial, they seldom think of inquiring into the cause; or of con-

sidering accurately for what particular purposes it ought to be employed. There is, however, no case where it would be more proper to combine theory with practice.

The uses of fallowing are, chiefly, to pulverize the soil in stiff land; to raise fresh soil in deep lands; to destroy couch grass and other root weeds, and to extirpate such weeds as grow from seeds deposited in the soil. The soil, it is believed, also acquires additional fertility by frequent stirring and exposure to the air: and no method yet known appears to be so efficacious for destroying grubs, and other insects, which sometimes commit dreadful havoc on young plants.

The dry gravelly soils of Galloway do not require to be pulverized; as, when sufficiently manured, they are commonly too loose: and as they generally admit of the operations of drilling and hoeing at all seasons, they might easily be kept clean, by a proper rotation of green and white crops; which ought, therefore, in most cases, to be adopted in preference to a bare fallow. When fallowing is employed for the purpose of extirpating weeds which spring from seed, the evil is often aggravated by the means which are intended to remove it. It is sometimes performed in so careless and slovenly a manner, that many of the weeds are actually suffered to grow to seed upon the fallow field: but when this is not the case, a plentiful supply is furnished from the unarable spots in it, and from the adjacent pasture lands and road sides, where thisties and other noxious plants are suffered to grow in abundance. The seeds of these, wafted by the winds are scattered over the whole field, and seldom fail to vegetate on a soil so well prepared for their reception. Independent of this, proper attention

tion is seldom bestowed to extirpate the seeds which which were previously lodged in the ground. To destroy *runches, wild mustard**, *gool*†, and many other small seeds, with which the lands in Galloway are pestered, it is necessary that they should all be made to vegetate. For this purpose, immediately after ploughing, if the land is dry, it ought to be harrowed as fine as possible; and, if necessary, the stiff clods broken with a roller. Such only as are near the surface will vegetate; it is necessary, therefore, as soon as vegetation has commenced, to plough a second time to bring up fresh seeds; and thus, by repeatedly stirring the soil at short intervals, the whole tribe might, in one favourable season, be completely extirpated.

The number of ploughings necessary in the course of a season cannot be specified. This must always be regulated by the progress of vegetation, which will vary according to the quality of the soil, and state of the weather. Wet summers are evidently most favourable for destroying weeds which grow from seed. Couch grass and other weeds which do not grow from seed, are, on the contrary, most effectually eradicated in dry seasons; and to plough or harrow in wet weather has only a tendency to encourage their growth.

Fallowing for the express purpose of destroying *grubs*, &c. has never been practised in Galloway. Such vermin are not indeed very common in Galloway: though, it is believed, they are found more frequently now than

* Or Charlock, Sinapis arvensis.

† Wild marigold.

formerly; and in some fields their effects are very pernicious *. On such lands after a complete summer fallow, the mischief is much lessened. This not only affords an opportunity for the rooks and other birds to pick them up; but is, as has been said, the means of actually starving them, by destroying the roots of plants on which they feed *.

If fallowing is, in any case, the means of fertilizing the soil merely from exposure to the air and light, it is probable that this will only hold with respect to such soils as are not destitute of manure. On thin, poor, and exhausted soils, it is, in the opinion of the best farmers, hurtful rather than useful. Exhausted lands will be much better recruited by remaining in pasture than by being fallowed for any length of time, without the addition of manures.

SECT. IV.—WHEAT.

The quantity of wheat raised in Galloway is not very considerable: the cultivation of it being confined chiefly to the district in the neighbourhood of Dumfries; to the carse lands and other strong soils in Kirkbean and Newabbey; to the lands of Baldoon, and to the banks of the Cree. Some farmers, however, in other parts of the country attempt it on a small scale with success, and the quantity raised seems to be increasing every year.

* See Farmer's Magazine, Vol. IX. p. 285.

The

The soil and climate of Galloway are considered to be unfavourable to the raising of wheat; and the mode of farming hitherto generally practised is certainly very much so. Whilst a series of white crops are cultivated in succession, it would certainly very much aggravate the mischief, if wheat should form one of them; but were white and green crops, or fallow, to succeed each other alternately, there cannot be a doubt that, on many farms, this valuable crop might be cultivated with advantage. There are curious documents to evince that wheat had been raised centuries ago on farms, where now it is never attempted. The autumnal rains which often prevail in this unsettled climate, are assigned as the principal objection to the cultivation of wheat in the soils best adapted for it. Mr Hannay in Grange, who cultivates it to a greater extent than perhaps any in Galloway, ascribes the failure of success more frequently to the want of sun from the time the wheat blossoms till the ears are filled, than to excess of rain in harvest. His manner of sowing deserves to be noticed. It is in the broad-cast way, which is practised universally in this district; but when he begins sowing, which is about the 6th of September, he sows only at the rate of two bushels per Scotch acre. As the season advances, he gradually increases his quantity of seed, till it amount to five bushels, if sown in November. He has made a variety of experiments to prevent the smut, from all which he infers, that washing the seed *thoroughly* with brine, salt water, or stale urine, and drying it with powdered lime, is the best and safest preventative; that this ought never to be neglected, and that any other expedient is unnecessary.

Wheat is frequently sown after potatoes, when the land receives one ploughing; sometimes after beans, when it receives one ploughing, with a sprinkling of dung; and often on fallow land, which had been ploughed from four to six time: first, immediately after harvest: a second time in April, or the beginning of May; and afterwards as the state of the ground directed. About thirty cart-loads of dung per acre are ploughed down on the fallow.

The species of seed which is generally used is the common white. The brown Kent, were its valuable qualities better known, might often be substituted with advantage, and perhaps be the means of extending the cultivation of this grain. This species has been very lately introduced into Galloway, and is yet very little cultivated. It is a spring wheat and ripens early. One farmer in Wigtonshire *, well skilled in the cultivation of this grain, and accurate in his observation, remarks, that last year (1808) being his first experiment, the increase was seven or eight bushels per acre more than from the winter wheat, and the quality also superior. The advantage of sowing old wheat in preference to new is not, perhaps, generally known or sufficiently attended to.

The average of seed may be stated at four bushels per Scots acre; the produce, at thirty-four, or thirty-five bushels; a large average certainly, when compared even with that of the best cultivated districts; but this is not astonishing, if we consider on how small a portion, and that too, of the best lands of the district, this crop is raised.

* Mr Cleghorn.

Drilling

Drilling or dibbling of wheat is very little, if at all, practised in Galloway. What is termed ribbing, or forming drill furrows at the distance of ten inches, and sowing broad-cast, has sometimes been attempted with advantage. On clayey lands it affords an opportunity of hoeing betwixt the rows, which is of service to the wheat, and raises fresh mould for covering grass-seeds in the following spring. A few of the farmers who have made the trial are very sensible of the advantage of introducing the thin chaffed wheats from England or the East-Lothians. This practice cannot be too strongly recommended.

It deserves to be noticed, that the quantity of wheat raised in Galloway last year (1809), exceeded the quantity of former years not less than one-third; a circumstance which certainly tends to mark the rapid progress of agricultural improvement.

For the following observations on the diseases of wheat, we are indebted to John Cathcart, Esq. of Genoch, a gentleman who, with scientific acquirements, unites practical skill and acute observation.

" What is termed abortion in the plant, and has been ascribed to the unhealthy state of the atmosphere, is more likely to be accounted for from intense heat in the weather, depriving a part of the seminal roots of plants of that moisture which was necessary; and which continuing to be withheld for a certain length of time, the capillary vessels decay, and part of the ear being deprived of its nourishment, remains empty; whilst those root fibres which lay less exposed to the scorching rays of the sun, bring to maturity that part of the ear which

which is supplied by them with nutrition. If the unhealthy state of the atmosphere were the cause of this disease, it is not apparent why one part of the ears on the same stalk should come to maturity, whilst another is deprived even of existence. Good seed of any kind of wheat, (probably the thin chaffed species is preferable) by sending out strong root fibres, may afford the means of prevention.

"If superabundant moisture either in the soil or climate is the chief cause of mildew, it is evident the thin chaffed wheats must possess advantages; as, from the shortness of their straw, they admit a freer circulation of air; and are, consequently, less liable to lodge. These, therefore, are peculiarly proper for all virgin soils after the first application of calcareous manures, when the plants are apt to become too luxuriant; and they would, probably, in general, succeed best in the western parts of Galloway, where humidity in the atmosphere is too often prevalent from the time the plant blossoms till it come to maturity. Some farmers complain of much mischief from the wire worm. Quere, Has no remedy been discovered?"

SECT. V.—RYE.

This species of grain is cultivated on a very small scale, and chiefly by the moor farmers. Winter rye, on moor farms is found to answer extremely well, and it appears surprising that it should not be raised in much greater quantities; as, under proper management, it is the

the most sure and valuable crop which can be produced: many of these farms having the advantage of strong soils, and manures in such abundance, that the farmers are sometimes at a loss how to expend them. It is always sown after potatoes; commonly before the end of October, or as early as the potatoes can be taken up. In place of winter rye, the farmers often sow in spring a mixture of rye and oats, provincially termed *brashloch*. The grain in this case is never so good, and the crop more liable to suffer from its ripening at a later period.

One farmer in the parish of Borgue, has for a series of years raised very fine crops of rye on a soil composed of a mixture of shells and sea sand, with apparently very little mould. He sows his rye immediately after the winter frosts; and the ground has a sufficient cover to defend it before the heats of the summer commence, which otherwise would parch it on the arid soil. The land is well dressed with compost, if not strongly manured with a previous crop of turnips or potatoes. His management appears to be extremely judicious; and the returns have much more than answered his expectations; which were not very sanguine, as other crops had commonly failed on the same soil. His crops have been equally good, and still more sure, on an adjoining flow moss, which he reclaimed, after draining, merely by a top dressing taken from the above soil, (if soil it may be called) but so plentifully put on, that the peat-moss immediately after bore the horses, and his future operations were performed by the plough. By this judicious management, two species of soils, before quite unproductive, have been brought to yield almost as good crops as any in this district. His produce of rye may be stated at 55 or 60 bushels per acre. In other parts of

the district, where rye is cultivated, the average is about 40 bushels. From this it will appear, even admitting that rye is cultivated on the best of the lands, that the crop is very profitable. When used for bread, it is neither mixed with wheaten flour, nor fermented. If this were done, it would be more wholesome and palatable.

SECT. VI.—BARLEY.

As the soils in Galloway are well adapted for barley, since the use of calcareous manures became general, it has been extensively cultivated. The species of it termed *bear*, or *big*, which recently was common every where, is now almost exclusively confined to moor farms, and to a few others still under the old stile of management*. The absurd practice of sowing it after two crops of oats, gradually disappears. It is sometimes sown on a ley furrow, but more frequently after potatoes, turnips, or fallow. April is considered to be the best seed time for this grain. Experiments have been made of sowing it early in March, and late in May. In the former case, the crops were thin; and in the latter, the grain proved light. In some cases, how

* Bear, or big, is cultivated pretty generally in the Machers: on some farms in the parishes of Whithorn, and Glasserton, it is the principal grain produced. This is occasioned by a very exorbitant thirlage exacted upon oats by the proprietor of a mill, to which the lands of other proprietors are thirled. This the farmers evade by sowing bear, on lands which without such restriction, would be applied to the cultivation of oats.

ever

ever, it may be advisable to sow late, for the sake of obtaining a partial fallow, to destroy the seed-weeds which too often make their appearance, and are not easily extirpated.

Drilling barley in rows, at the distance of six inches, and at the rate of three bushels per acre, has been practised in a few instances; and the crop was thought superior to broad cast.

The species of seed used, is that which is common over all Britain.

The quantity sown varies from 4 to 5 bushels per acre. The produce may be stated at from 40 to 50 bushels. It sometimes reaches 68, but the average does not exceed 45.

Since the introduction of potatoe oats, barley has not been cultivated to the same extent as before. The additional tax upon malt has greatly diminished the consumption of it in this district. Barley weighs from 46 to 53 lb. per bushel, but the quantity of saccharine substance is less than that which is afforded by grain of the same weight, in a better climate.

SECT. VII—OATS.

Oats form by far the most important article of agricultural produce in Galloway. The land sown with oats

oats never gets more than one ploughing, whether in ley, *aval**, or third crop break: and it is supposed to be an advantage that this should not be performed early in the season; as in open winters, which very often occur, the loose soils of Galloway are much injured by the copious rains.

Some farmers bestow proper attention in the choice of seed; though the majority are by far too careless, either in procuring good seed, or adapting it to the quality of the land. Grey oats, formerly universal, have now totally disappeared. A species of white oats, which resembles the Blainslie oats of the east country, is chiefly cultivated. Different kinds of early oats have been tried with various success, but have now given place to a species introduced several years ago from the north of England, termed potatoe oats, which, from their excellent qualities, deservedly stand very high in the opinion of the farmers. In its prolific powers, and ripening early, it is not inferior to the Poland, with the very great advantage in its favour, that it is not so liable to be shaken. The straw, though apparently coarse, is, in reality, better fodder than that of any other species. From the strength of the stem it is not apt to lodge even on fertile soils; and is considered to be nearly as good as barley for sowing along with grass seeds. It is, however, chiefly adapted for lands in good condition: and very great mistakes are often committed, by sowing it indiscriminately on good or bad lands. It is, perhaps, from this circumstance that the quality of the grain is supposed to be degenerating; though independent of

* Crop after ley.

this,

this, grain and seeds of every description appear to become less prolific when long accustomed to the same soil; so that a change of soil, and, perhaps, also a change of climate, or some other circumstance, is necessary to renovate their prolific powers. A sufficient length of time has not yet elapsed since the introduction of potatoe oats, to ascertain, whether, on being familiarized to the country, they will also be slower in coming to maturity. It has been observed by one of the most accurate natural historians which this country ever produced, that some plants, when brought from warm to cold climates, notwithstanding the change of temperature, continue to blossom as early as they did in those countries where they were indigenous. If this is applicable, in any degree to the different species of grain, it would appear adviseable, in making a change of seed, where early ripening is the object, to import from those countries where vegetation is rapid. Are the different species of oats to be considered only as varieties occasioned by a difference of soil, climate, or other incidental circumstances? Or were they originally different? Might not an improvement be made on the seed by selecting such grains in the ear as are best, and have ripened earliest?

Changes of seed from the low to the high country, or from strong clayey soils to light gravelly ones, are always found beneficial. A few farmers occasionally import oats for seed from Angus-shire, and other parts of the eastern coast of Scotland. Though there is no perceptible difference in the species of grain from the common oats, yet both the quality and increase are always improved by this means: after a year or two, however, the produce is no better than the common seed of the country.

country. The average produce of common oats is calculated at 35 bushels per acre; and of potatoe oats at 40 bushels. In strong soils, potatoe oate commonly produce from 50 to 60. Solitary instances have been quoted as high as 100. The average weight of common oats is thirty-six lib., of potatoe oats, thirty-nine lib. avordupois. This is to be understood only of the produce of what we have termed the arable district. In the moor and mountainous districts, the varieties are so great, and depend so much on the season, that it is impossible to fix an average with any degree of precision.

The grub, is more frequently injurious to oats than to any other crop; perhaps, because the land is seldom prepared by a green crop or fallow, which, as already mentioned, appears to be the best preventative. The smut, which sometimes appears among oats and barley, might doubtless be prevented by steeping, or washing the seed &c. as practised with wheat; but this is never thought of by the farmers.

Wheat, oats, and barley are commonly cut with the sickle. In the dry sandy soils near Dumfries mowing is sometimes practised, and in a few other places, though very partially. The uncertainty of the climate forms the chief objection to this method of reaping. It may be added, a reluctance, and of course, an awkwardness on the part of the labourers, from an idea that if it were to become general, it would tend to the reduction of wages in harvest.

All the sorts of grain which have been described, are, when cut, set up in shocks (provincially stooks) consisting of twelve sheaves each, of which ten are placed in

in two rows, and two are used for *hoods*, or covers, for the other ten. A good deal of dexterity is requisite to perform this part of the work well, and as the *bandsmen* * are often taken indiscriminately from the common labourers, it is for the most part done in a manner so slovenly, as in bad harvests, to occasion much loss and trouble which might otherwise be prevented. A simple, but excellent method, is often employed by moor farmers for saving their little crops. The sheaves are tied near the top, not loosely, as described by Mr Marshal, but very *tightly*; the binder then takes hold of the sheaf with one hand, with the other spreads the bottom, so that when erected, it has precisely the appearance of the straw covering of a bee hive; the top is then compressed to exclude the rains. When the single sheaves (gaites) have remained in this position for a few days, if the weather is unpromising, they are formed into very small ricks, of a conical figure, tapering, however, but little till near the top. When the sheaves are piled up successively, in building, the butt-ends are carefully spread so as to cover completely the ears, and thus serve as thatch for the sheaves underneath. A large sheaf is used for the hood, put on in the same way as in a common stack. The little building is then secured with a rope, and the grain thus thatched with its own straw bids defiance to the heaviest rains.

Oat meal forms a very material article of food to the peasantry of this district. Oaten cakes are relished by all classes, and often preferred to the best wheaten bread. They are no less wholesome and nutritious.

* Binders.

It is a very mistaken idea to suppose that they possess any heating or inflammatory qualities, or that they have a tendency to produce cutaneous diseases. It is to be regretted that they are not more generally relished, as when there is a deficiency in the wheat crop, which frequently occurs, they would afford a very convenient substitute. Oat meal affords, perhaps more solid nourishment than flour in equal quantity; and the difference of price is as three to four and one half in favour of the former.

SECT. VII.—BEANS AND PEASE.

Through the greatest part of Galloway, the quantity of pease and beans cultivated, did little more, till lately, than afford seed, and furnish a few for the use of the farmers family. Pease have often been tried, from the idea that they are an enriching crop, and clear the land. But in the way in which they were managed, they too often proved the reverse, in both respects; being little better than a nursery for weeds: And if a few got the better of these, and came to maturity, (which sometimes happened) if the harvest was bad, whilst the attention of the farmer was devoted to more valuable crops, they were left to enrich the soil by rotting on its surface. Beans were no better managed.

By a few farmers, however, beans have lately been cultivated on a more extended scale, and to much better purpose. They are commonly planted in drills, at the

the distance of twenty-seven inches, and being dunged and horse-hoed, frequently turn out a valuable crop; and are then considered to be a good preparative for wheat or oats, according to the quality of the soil. On very clean lands, it is still the opinion of judicious farmers that sowing broad cast is preferable to drills for this species of crop. A very general failure in this crop has taken place in the two last years, (1807 and 1808) which, it is feared, will discourage the cultivation of it to that extent which its importance certainly merits. This failure, however, was not peculiar to Galloway, but very general over the country, and various causes have been assigned for it. The leaves became of a dull red; the blossoms withered; and the newly formed pods made no further progress. In some the stems e re covered with myriads of small insects; in others, where no insects were visible, the fibres of the roots were cut, or loosened from the soil. A recurrence of such accidents, for which it seems impossible to discover any remedy, cannot fail to discourage the most enterprising farmers from prosecuting, on a large scale, a species of husbandry attended with so much uncertainty.

SECT. VIII.—TURNIPS.

There is no branch of husbandry which is so much *talked of* in Galloway as the cultivation of turnips. It is also *practised* in most parts of the district, though on a scale which, by good farmers, from some other

counties, is considered as by far too limited. The reluctance of the Galloway farmers to prosecute the turnip husbandry to a greater extent, cannot be ascribed altogether to prejudice; for many of them have fairly made the experiment, and, for a series of years, have succeeded in raising pretty good crops. The soils, they admit, are well adapted for turnips. Most of the large farms are provided with sheds, straw yards, and good accommodation for stall feeding. Resources, therefore, are not wanting for manures, and in a country abounding with sheep and black cattle, the means of consuming the crop must always be convenient. The farmers are of opinion, however, that potatoes are a more valuable and less precarious crop: that they clean the land as well, and that the following crop is even better. But the chief reason assigned for not cultivating turnips to a greater extent, is the difficulty of finding a market for sheep or cattle, when fattened for the butcher, and the small improvement made on lean stock by turnip feeding. The saving in the article of fodder, they say, is very inconsiderable; and if the turnips are exhausted early in spring, which is commonly the case, the cattle fed upon them lose as much, in the interval, before they can be turned out to pasture, as they had gained before from turnip feeding.

On the contrary, the advocates for the turnip husbandry contend, that this is the most important of all the improvements in agriculture—the grand enricher of the soil—the only means of cultivating light soils successfully—of devising a proper rotation of crops—and by far the best expedient for supporting live stock, and preparing them for the market during the winter and spring months; and they are disposed to estimate the talents

lents of farmers, or state of husbandry, chiefly from the skill and activity displayed in the management of this single article. Very few of the Galloway farmers, however, will bear to be tried by such a criterion. Though very good turnip crops are occasionally to be found in the district, and though there are individuals who understand the management as well, perhaps, as the best farmers in any other part of the kingdom, yet it will be long, I fear, before the general practice displays that zeal to extend the crop, that neatness and celerity in preparing the ground and putting in the seed; that attention and accuracy in hoeing, thinning, and weeding, and that judgement and œconomy in expending the produce, which are so conspicuous in some of the eastern counties of Scotland.

It is of much importance to enquire how far any of these opinions are well founded: and to ascertain whether the want of success in the attempts which have been made to extend the cultivation of turnips, is to be ascribed to prejudice, want of enterprize, and bad management, or to obstacles peculiar to the district, by which the best plans of management would be defeated. The full investigation of this question would extend the article to too great a length; but what follows, it is hoped, will throw some light upon the subject.

Soil.—The dry gravelly soils, so common throughout the district, are extremely favourable to the growth of turnips; and when peat earth is mixed with them, if this is decompounded with dung, and calcareous manures, their virtues appear still to be encreased. The lighty sandy soil of the district answers very well: on

the clayey soils they ought not to be attempted. But the chief obstacle arises not from the nature of the soil, but from the broken surface of the country, which so often renders tillage expensive, and makes it impossible to perform the frequent ploughings necessary with that celerity which is indispensible when turnips are cultivated on an extensive scale. This circumstance is probably overlooked by those who condemn the Galloway farmers, for their inattention to this branch of husbandry. It militates, however, nearly with equal force against the cultivation of potatoes, which still remains a favourite object: and it must be confessed, that where no such obstacles occur, the practice is seldom very much extended.

Culture.—The mode of cultivation adopted by the best farmers, being nearly the same with that which is practiced in the most improved districts, is as follows. The ground is ploughed immediately after harvest, sometimes into broad, and sometimes into narrow ridges, and with a deep furrow if the soil admits of it. In March, or the beginning of April, it receives a cross ploughing, is well harrowed, the clods are broken, and the root weeds are carefully gathered. When the seed weeds begin to vegetate, it is again ploughed, and harrowed. The same process must be repeated a third, or even a fourth time if the land is foul: and it is of great consequence that these operations should always be performed at proper intervals, to be regulated by the nature of the soil and state of the weather. Inattention to this often renders the subsequent operations troublesome, occasions a failure in the crop, and in part defeats the important object of cleaning the ground by it.

Manuring.

Manuring.—Here it is believed even the best of our farmers commit mistakes. An idea generally prevails that turnips require much less dung than potatoes, and accordingly it is often very parsimoniously applied. But if manure is scantily applied, the crop will almost in every case be deficient. This, in a great measure, accounts for the prevailing opinion that the following crop is better after potatoes than turnips. It is no wonder that both the turnips themselves, and the crop following should be inferior in value, when the quantity of dung they receive is only about one-half of what would have been given to potatoes, or perhaps in a still greater disproportion. But if it is a mistake in every case to extend tillage beyond the resources of manuring properly, this must especially be the case, in broken lands where the expence of tillage is increased; and still more so in those crops where repeated ploughings become necessary. The quantity of dung ought to be nearly as much for turnips as for potatoes, and seldom less than from forty* to fifty cart-loads per acre, if the land is not previously in good condition. The weighty crop which is produced from plentiful manuring will repay the additional expence of the manure, and leave as clear gain the permanent improvement made upon the soil. The dung is commonly applied immediately before the seed is sown. The ground being ploughed into ridges at the distance of thirty inches, this manure is spread in the intervals; the ridges are then split with the plough to cover it, and form other ridges, or drills, for receiving the seed.

Seed.—The quantity of seed used is from one to two pounds per acre. This is commonly sown with a drill

* From twenty to twenty-five tons.

barrow. But a machine has lately been introduced, which greatly abridges the process, and does it to better purpose. This is a machine drawn by a horse which sows two drills at once; and which smooths the ridges, and deposits and rolls in the seed at the same time. It will appear obvious, that in a dry season this should immediately follow the plough; and should be so constructed, that the pressure given by the roller may be increased or diminished as circumstances require.

Farmers who cultivate turnips to any considerable extent, ought always to sow three kinds: the white globe; red topped; and ruta baga, or Swedish turnip. This will afford a succession of winter and spring food, and save, in a great measure, the necessity of storing, which is always troublesome, and often fails of keeping them in complete preservation. The Swedish turnip is sown about the end of May, or beginning of June. The other two kinds from the middle to the end of June, or beginning of July. Even when sown later, they have proved a good crop; though this is always precarious. When from the fly, or other accidents, the first crop has failed, and the season was too far advanced to sow the lands a second time, the deficiency has sometimes been supplied by transplanting Swedish turnips. Some farmers save seed for themselves, which is a good practice, especially when they cultivate the Swedish turnip; the seed of which is often not obtained genuine from the shops; which has not only occasioned great losses, but nearly brought the root itself into discredit.

We have not seen any yellow field turnips. This variety is said to possess all the valuable qualities of the Swedish

Swedish turnip; and upon ordinary soils to yield a weightier crop.

Hoeing.—When the weeds begin to appear, they are cleaned with small ploughs or scrapers, which are made to run as near to the centre of the ridges as possible without displacing the plants. They are then hand-hoed, and thinned, leaving standing plants, at distances of ten or twelve inches; and eight or ten days thereafter the earth is ploughed back *. Small harrows are sometimes used to clean the intervals; though this is commonly performed by a plough of small dimensions, drawn by one horse. A second hand-hoeing, some time after, becomes necessary; when weeds and all superfluous plants are removed; and when these are decayed so far as not again to take root, the earth in the intervals is laid back to the sides of the drill by a double moulded plough, care being taken not to cover the bulb of the plant; for it is found by experience, that turnips always grow best, when the greatest part of the bulb remains exposed to the atmosphere. If any weeds should have escaped, they ought to be picked up at any after period; for though they should not check the growth of the turnips, they will not fail to pollute the soil, and injure succeeding crops. If turnips do not clean the land properly, which we believe is very often the case, the reason undoubtedly is, that they have not been managed with that care and attention which is necessary. It is not wonderful if they do not clean the land as well as potatoes, when they are not themselves

* Some good farmers approve of hand-hoeing and thinning the plants before they are horse-hoed; and as soon as they have obtained the rough leaf; reserving plants at the distance of eight or nine inches.

so well cleaned. Under slovenly management, a potatoe crop has one great advantage: for when the potatoes are taken up, the farmer is obliged of necessity to stir or turn over the soil, which will destroy the greater part of those weeds which have not actually grown to seed. But in turnips this is commonly omitted, which has a very bad effect, even when nothing has been neglected in the preceding process. Vegetation, in this country, continues very late in the season, and weeds or tufts of grass will make their appearance after the last dressing, which, though of little detriment to the turnips, remain when they are taken up, and deprive the soil of the good effects it would receive from being freely exposed to the atmosphere. As soon, therefore, as the turnip crop is taken from the field, or consumed upon it, the land ought to be ploughed. It may be harrowed in March; and, (if barley or potatoe oats are sown upon it,) receive a second ploughing on putting in the seed. All these operations may be performed with a small plough and one horse.

Consumption.—Too little attention has been given to the best modes of consuming this valuable crop; which is perhaps the chief cause why it has not been more extensively cultivated. Sheep are very seldom folded on turnips, from the idea, that when fattened for the butcher, they would not find a proper market. And for the same reason very few are expended in fattening black cattle. It seems, however, to be a mistaken idea. In the spring and beginning of summer a scarcity of butcher meat often prevails in the district. The taste for fresh, in preference to salted meat, is daily becoming more prevalent, among all who can afford to purchase butcher-meat; and it is probably the very scarcity of this

this article which hinders purchasers to come from distant towns.

Turnips afford a most valuable article of food for milch cows. The profits of the dairy are however seldom fairly appreciated by Galloway farmers; and till more attention is paid to dairy management, it is not to be expected that they will thus be turned to the most profitable account. When they are used for this purpose, the cows ought to be fed with them while the pasture is deficient, except during the interval when they are not giving milk. Or if the turnips fail, potatoes ought to supply the deficiency.

But turnips may be applied in a different manner, for which Galloway has peculiar advantages. It has been observed, that the Galloway cattle fatten at an early period, and before they are two years old, are commonly at the beginning of winter in remarkably good condition; but before the end of spring are much reduced. There cannot be a greater mistake in rearing cattle than to suffer them, when once fat, again to become lean. Young stock, when wintered in the field, are most liable to suffer from this circumstance. Such, therefore, should be selected for the straw yard, and supplied regularly with green food, so that they might gain not only in growth, but in fatness, till the pastures resume their verdure. Reared in this manner they will improve, perhaps, more in one, than in two years, under the common management; and before they are three years of age, will be fit for the butcher. In whatever way turnips are used, no more cattle should be fed with them than can be maintained properly during the whole season: for if they

are

are pinched in spring, the benefits they have received from good feeding in winter will certainly be lost.

Some skill, and much attention is undoubtedly necessary in order to feed cattle properly with turnips; and in both, it is feared, the Galloway farmers are sometimes deficient. Every one may be sensible of the bad effects of cramming them at one time, and pinching them at another. This, however, with other bad consequences must follow, if a herd of cattle is turned into a field of turnips, or even fed with them, when carted into an adjoining field, unless they are distributed in very moderate quantities. It is undoubtedly of advantage in the end of Autumn, or beginning of winter, when the pastures begin to fail, to allow cattle a few turnips to supply the deficiency of grass, and to prepare them by a gradual transition, for the more copious use of the turnips when put into the sheds.

SECT. IX.—POTATOES.

Of all the crops raised in Galloway, none is in general so well managed as potatoes. A full account of the mode of cultivation, it is therefore presumed, will not appear improper. For reclaiming patches of unarable ground, bogs, or mosses, they are sometimes cultivated in what is termed, though very improperly, the *lazy bed* way, since few operations in agriculture require more active and laborious exertion on the part of the husbandman. The method of doing this is, to spread the dung

on beds 5 or 6 feet wide, with spaces between them of about 2 feet, from which the potatoes are covered. They receive another thin covering when the stems begin to appear above the ground, and seldom require any weeding, or cleaning, till the crop is taken up. If the ground is foul, they are sometimes, however, planted in rows across the beds, and hand-hoed afterwards. With the above exception, potatoes have, for 30 years past, been universally cultivated with the plough. The land is prepared, in the same way as for turnips, by a winter fallow; and even greater attention should be paid to cleaning it, as the ploughings are less frequent. In the common practice, two white crops precede the fallow for potatoes; which ought never to be the case, except when old leys had been broken up, or on very stiff tenacious soils which could not have been pulverized with less. But on friable loams, gravelly, or sandy soils, potatoes ought always to be planted after one white crop only; and with no more previous ploughings than what are necessary to clear the ground of couch grass, &c.: for it is found by experience, that a very fine tilth is hurtful rather than useful. After the cross ploughing in spring, the ground should be very well harrowed, and remain two or three weeks to destroy a crop of seed-weeds, which in that time will vegetate. The furrows are then drawn, commonly at three feet distance. But if the ground is not sufficiently broken, or cleaned, the whole field may be again ploughed into small ridges, with the furrows at proper distances for planting the potatoes This distance ought never to be less than three feet; but good farmers, when they have not a sufficient quantity of dung for the field they intend to cultivate, sometimes increase the distance to three feet and a half. By this means, a larger space of ground

ground may be cultivated with the same labour; the potatoe crop will be better; and, what is of still greater consequence, the subsequent ploughings may be continued so long as to afford all the advantages of a complete fallow. When the rows are distant, a species of potatoe should be planted which sends out large stems; for if potatoes, or other green crops, are *enriching*, or to speak properly, less *exhausting* than white crops; this, doubtless, must partly be ascribed to the shade they afford; whether this be the means of attracting nourishment from the air, or preventing the earth from expending her fertility.

In the choice of seed, though a circumstance of much importance, the farmers are commonly too careless. Frequent changes appear to be indispensibly necessary for preserving its prolific quality. Every species introduced into Galloway, except the *purple-red*, has degenerated after being a few years, accustomed to the soil. This species still grows to a large size, yields much farina, keeps longer than any other, and is therefore pretty generally cultivated. A few farmers occasionally procure changes of seed from England, Ireland, or the east country. But by far the best method of renovating the seed of potatoes, is to raise them from the apple. In this way, as many varieties may be obtained, as in gooseberries cultivated after the same manner. Very few of these however, are worth preserving; and it requires some skill and experience to select the best out of the first crop: but when a judicious selection is made, the advantage far exceeds what the generality of farmers appear to have any idea of. The quality of the potatoe may thus be improved, or the produce aug-

mented. In some of the improved sorts, both of these advantages are combined.

Dung is commonly used for manure at the rate of from 40 to 50 cart loads per acre. Marl has been tried with success, in a few instances, and Lord Meadowbank's moss compost is found to be excellent. These are always spread in the furrow before the potatoes are planted.

The potatoes being cut into sets, containing, at least, one eye, are planted at the distance of from 6 to 12 inches, which ought to be regulated by the nature of the soil, the distance of the drills, and species cultivated. For it is obvious that those which send out luxuriant shoots, and have large stems, will require perhaps double the distance proper for some other kinds; though this circumstance is often overlooked.

Potatoes are planted in the end of April and beginning of May. They are covered by dividing the ridges on both sides, leaving however a small portion, which is ploughed up when the weeds make their appearance.

When the earliest shoots appear above ground, they ought to be completely harrowed with a short-toothed harrow: and ten or twelve days afterwards, the earth is ploughed from them by running the plough as near as possible to the drills without displacing the plants. In a short time after, the earth is again ploughed to, and with this the operations too often terminate: but it would always be of advantage to give them one or two ploughings more, the last to be performed with a single horse, when the lateral shoots of the stem have nearly met

met across the furrows. Independent of some advantage to the crop; this is highly beneficial for cleaning the ground. Frequent ploughings are of much more utility after the potatoes are planted than before, as it is during this part of the season chiefly that seed-weeds can be destroyed; and even couch grass, &c. if thus prevented from vegetating, till they are completely overshadowed by the leaves of the potatoes, will perish on the soil, and communicate to it additional fertility. It is only, however, in dry and very friable soils, that this ought to be trusted to. The Reporter is aware, that perhaps in every case it will be considered as in direct opposition to the principles of good husbandry to do so. Weeding, and hand-hoeing are little practised; indeed, when the management is in all other respects good, it is seldom necessary.

When the stalks are decayed, and the potatoes readily part from the root fibres, which is commonly about the middle of October, they are taken up and stored for future consumption. Taking up potatoes *with the plough* is often practised, but the spade is generally preferred, or a three-pronged fork, which is a much more convenient instrument.

All the farmers have potatoe houses, situated commonly on a sloping bank, with the walls mostly under ground, having a door in the lower end to take out the potatoes, and a small aperture in the upper end to receive them. The most convenient form, is to have them very long and narrow, with two or three apertures in the side; as by this means the potatoes are more readily stored, and keep much better. Potatoes which are reserved for use, when the season is far advanced, are frequently stored

stored in pits or heaps. The best method is to sink a pit a foot or two deep, four or five feet wide, and of any indefinite length; to pile the potatoes two feet above the surface, and after giving them a thin covering of straw or fern, to form the heap with mold into a shape resembling the roof of a house. This is sometimes thatched, but if the mould is well compressed with the spade, nothing more is necessary. In this way, potatoes are expeditiously stored; remain secure from the rains and frosts; and the air and light being excluded, they do not vegetate so early in spring as when put up in houses.

The quantity of seed varies from 10 to 12 cwt. per acre. The average produce, on good land, may be stated at 140 cwt. The price when taken up at 1s. 3d., in the spring at 1s. 10d. or 2s.

A few potatoes are exported, but the surplus produce, after supplying the inhabitants, is chiefly consumed by hogs, cows, and horses.

About one-twelfth part of the lands in tillage throughout Galloway is usually occupied with potatoes. They afford perhaps nearly one-half of the vegetable food of its inhabitants. Many of the lower orders live upon little else; yet enjoy good health, and bear labour and fatigue in an equal degree with those who fare much better. Of all the crops raised in Galloway, or perhaps in Great Britain, none (carrots excepted) afford so much real nourishment from the same extent of land. Neither wheat, barley, nor oats, afford much more than one-third part. The cultivation of potatoes has, therefore, perhaps more than any one circumstance,

and certainly much more than is commonly supposed, contributed to advance the value of lands, and increase the population of the country. How far, however, it would be desireable that their cultivation should be extended, or whether, as an article of human food, it would be desireable to extend it any farther?—these are questions on which it would not be easy to decide, and would lead to investigation, foreign to this survey.

In the opinion of all the best informed farmers, boiling is a material improvement, when they are used as food for cows, hogs, or horses. Only a very few prepare them with steam; which they find to be the best method. It is believed, that, under good management, potatoes do not exhaust the soil more than turnips; when the turnips are not eaten upon the land, and less than any other crop commonly cultivated.

SECT. X.—CARROTS.

Carrots are cultivated by every farmer, and by every cottager for culinary purposes; but for any other purpose, the cultivation of them is chiefly restricted to a few proprietors. The crops we have seen, and the accounts we have received, induce us to believe that this root is not unworthy the attention of farmers. In favourable soils, and under good management, few crops are of superior value. Carrots possess several advantages over turnips. The quantity of food which they afford is probably greater, and the quality more nutritious: they may

may be stored with much less hazard or inconvenience, or without any risque, allowed to remain in the field to furnish spring food, when turnips are exhausted, or cease to be of value. For fattening hogs and cattle, and feeding horses, carrots are well known to be incomparably better. On lands well adapted for them, the crop is by no means precarious, if attention is given to procure good seed, and to the subsequent culture. They do not, however, like other green crops, answer the purposes of fallowing, for the land must be previously clean, otherwise the culture would be extremely troublesome: on this account, they ought never perhaps to be attempted on an extensive scale.

Adam Thomson Mure, Esq. has cultivated them successfully for several years. He sows them after a crop of potatoes, or on land which had been dunged the preceding year, and well cleaned, and finely pulverized by repeated ploughings. The seed is sown about the beginning of April. The subsequent management is so similar to that of turnips, as not to require a separate account.

Their great utility in feeding horses, and the saving of oats which may thus be obtained, affords a sufficient inducement to farmers to appropriate a small proportion of their lands to this valuable crop; and a very small proportion under good management will answer the purpose.

Sandy soils mixed with loam, and deep gravelly soils cleared of stones, answer very well. The Reporter tried them for an experiment on a peat soil, which had been

for some time under culture, and well manured with shells: they were sown broad-cast, and the crop was extraordinary.

SECT. XI.—FLAX.

The flax raised in the district is scarcely sufficient for the small quantity of linen manufactured in the families of farmers and cottagers, and not nearly adequate to what is wanted for the whole inhabitants. The bulk of farmers cultivate a little, however, and many of them also assign a patch of ground for flax to the cottager, as a part of what is termed his *benefit*. Encouraged by the liberal premiums granted by the Highland Society, some individuals have attempted to extend the cultivation of it; and flax mills have been erected in various parts of the district. From want of skill, however, or more probably from want of that minute attention necessary to all the different parts of management; their attempts, though sometimes successful, have frequently failed, and impressed the idea that this will never become a profitable branch of husbandry in Galloway. The extreme difficulty of procuring a sufficient number of hands for weeding, pulling, watering, &c. as these operations interfere with other necessary labours of the farm, at busy periods, present insuperable obstacles to extending cultivation far.

Their prejudices seem, however, to be carried too great a length. Most of the alluvial, and many of the other strong soils in Galloway, are well adapted for the growth

growth of flax; and in the few instances where it has been well managed, a failure of the crop has been seldom experienced; and the profits arising from it have often exceeded those of almost any other crop.

Land which is intended for flax should be thoroughly cleaned, and pulverized, and at seed time harrowed as fine as possible. Ten stones, of 16lb. avoirdupois per acre, is the quantity of seed requisite when a crop of flax is intended: but if seed is the object, one-third less will be sufficient. It is usually sown about the end of April, or beginning of May, and covered with a double stroke of a small-teethed harrow.

Under the old management, the weeding of flax used to be a very troublesome and tedious operation. But since the proper method of cleaning lands came to be better understood, the necessity of hand-weeding has been in a great measure superseded. When the *bell*, as it is termed, or beautiful flower is fully expanded, and begins to decay, it is time to pull the flax; unless a crop of seed is intended, when the seed must be allowed to ripen.

The time which flax ought to remain in the water, must be regulated by the warmth of the weather, and quality of the water in which it is steeped; and can only be judged from inspection by those who are accustomed to the managemant of this crop. There is always danger in suffering it to remain too long; but if it has not remained long enough for the separation of the rind, this may be remedied by suffering it to remain longer on the grass.

The high price of flax-seed occasioned by the interruption of our intercourse with the Continent, operates as a powerful obstruction to the cultivation of flax. This might, in a great measure, be remedied, were proper attention bestowed to improve the seed of our own country. There is no species of seed which can be more easily raised, or obtained, we apprehend, in greater perfection from the produce of our own country. Changes of seed are doubtless very proper; but as flax admits of being cultivated on a variety of soils, the necessary changes might be obtained by due attention to this circumstance, or by transporting the seed from one part of the kingdom to another.

The superiority of the seed obtained from the Dutch is, perhaps, chiefly to be ascribed to the superior skill of that industrious people in the management of it.

The seed produced from flax cultivated on moorlands newly broken up, is said to be excellent; which, from the strength of such virgin soils, seems highly probable.

The quality of seed is also improved, without any diminution of the quantity, when the crop is thin, so as freely to admit the air and rays of the sun, and to allow branches to spread luxuriantly. The same observations apply to many other seeds. We, by no means, condemn frequent importations of foreign seeds, but are of opinion, that no good reason can be assigned for importing the seed of flax more frequently than that of many other plants.

SECT.

SECT. XII.—ARTIFICIAL GRASSES.

In the best improved districts of Galloway, the cultivation of artificial grasses has been long practised, and is now prevalent through every part of the country. But as the old system of taking two or three white crops in succession, before the lands are sown out, has not yet been universally abandoned; this branch of husbandry must still be considered as very imperfect. To clear the soil of weeds, and enrich it with manure before sowing the grass-seeds, though indispensibly necessary to a good crop, is still too much neglected. The sweepings of the hay loft, or gleanings from the barn floor, and hay stack, half ripened, ill cleaned, and often musty, with a few pounds of clover seeds, or perhaps without any other seeds whatever; thinly scattered over the soil, forms frequently what is termed *sowing out*. Such slovenly practices, however, more and more disappear. Many of the farmers are very attentive to sow out their lands in good condition, and in a proper manner.

Where a crop of hay is the object, the grasses, almost exclusively cultivated, are red clover, and rye grass, in the proportion of 6 or 8 lbs. of the former to a bushel of the latter. If foreign seed is used, this is esteemed sufficient for a Scotch acre; but when the rye grass is of the growth of the country, two bushels (more or less according to its quality) are used. If the lands are meant to be pastured, a few pounds of white clover,

and rib-grass seeds are frequently added, and the quantity of red clover diminished: though this is seldom necessary, as in the fine soils of Galloway, these soon grow spontaneously, when the lands are laid out in good condition.

Grass seeds are commonly sown with barley, or potatoe oats, and receive the last stroke of the harrow, or some times are rolled down. Some very good farmers sow them with wheat, which is found to answer very well.

From a very just idea that many of the seeds are lost when buried deep, some make use of thorns instead of the harrow, a very awkward practice; but it would certainly be a material improvement to substitute a harrow with a great number of teeth, short and well sharpened, in place of the large harrows now commonly used, which would cover the seeds more generally, without burying any of them too deep in the soil.

The seeds above mentioned appear to be preferable to every other kind for the generality of soils in Galloway. Lucern, and Sainfoin have been tried; but the success of the experiments will not justify recommending them for common use, even in the most favourable situations of the county.

In wet lands, or soft boggy soils, none of the seeds which have been described are found to answer. Such lands are, therefore, either not sown out, or the seed is lost. A combination of some of the following grass seeds may be used in place of them with great advantage, viz. goose grass, common poa, soft meadow grass, fox-tail,

tail, and wild perennial red clover. A variety of others might be mentioned: but in agriculture, as in medicine, it is undoubtedly of much importance to simplify the practice; and instead of a long complicated list, which could have no other use but to perplex the farmer, and enrich the seedsman, to prescribe only a few of the most approved utility. Few farmers are botanists. Even the seeds last mentioned are not, perhaps, generally known, either by their botanical or common names, and are rarely to be found in the shops of provincial towns. But it will serve the purpose equally well to allow a piece of rich meadow grass to grow to maturity, and to preserve the ripened seeds for the use of such lands as are not adapted either for clover or rye-grass.

To procure clover seed from their own crops has never been successfully attempted by any of the farmers in Galloway: and very few pay that attention to the management of rye-grass for seed, which is necessary to obtain it in perfection. It is, perhaps, from this circumstance alone that the *home seed* is inferior to the produce of Norfolk. To procure it of the best quality, it is only necessary to mark out a part of the field of the best soil, and thoroughly cleaned to sow it with the best rye-grass, without any mixture of other seeds; and if any other grasses appear, they ought to be carefully picked out either before or after the rye-grass is cut. It should be cut when it has arrived at maturity, and at a time when it is free from all moisture, from rains or dews. The process afterwards is very simple. It is best, perhaps, to thresh and clean it on the field, if the state of the weather permits. Some recommend sowing clover along with rye-grass, even when this is in-

tended for seed, though it seems doubtful if the benefit derived from the clover crop will compensate for the trouble and loss of seed, which must take place either from separating them when cut, or *winning* * them together.

SECT. XIII.—HAY-MAKING.

Few of the operations of husbandry betray more ignorance or carelessness than the making of hay, as it is performed by the bulk of farmers in Galloway. It is usual to allow the hay to remain in the swath, or spread upon the field, (sometimes turning it over, and sometimes not) till nearly the whole of the succulent juices are exhaled by the sun, or washed out by the rains. It is then gathered into large cocks, or ricks, where it sometimes remains till the end of harvest; when much of it is rotten in the tops and bottoms of the ricks, and the remainder becomes still more withered and sapless from long exposure to the atmosphere before it is stored in the hay-yard for winter consumption. If the loss sustained by this means in bog meadows is great, it is still greater in artificial grasses; whose seeds are entirely lost, and the hay itself often rendered as bad as common straw. All this is done from the idea of saving a little trouble or expence in hay-making; and both are

* Provincial term for hay-making.

often

often greatly encreased, by the methods employed to diminish them.

Instead of combating a practice so palpably absurd, though it has the sanction of antient custom, and still receives too much countenance from the numbers who follow it, I shall describe the method practiced by the best farmers, which I know from long experience to be a good one. The process is simple. Rye-grass, ought to be cut when dry, if possible; and on the day following, as soon as the dews are exhaled, the swath should be turned over to dispel such moisture as may have arisen from the ground, or the succulent juices of clover; and in a few hours after, formed into cocks of small diameters, but as high as they can be made to stand, taking care that they are nearly of the same diameter from top to bottom, and neatly finished to keep out the rains. This is done with very little trouble. The size of the cocks must be regulated by the condition of the hay; but they ought never to be so large as to endanger fermentation. If the weather is settled, the hay may be allowed to remain in this state till it is fit to be carted into the hay-yard, and stored for winter. But in this case the winter stacks ought never to be large; as fermentation will then ensue, though the hay is apparently very dry. It is, however, commonly preferable after eight or ten days, to form these small cocks into larger ones, containing about a cart-load each. The proper time of doing this must be determined by inspection; as when there is much clover, a longer period will be evidently necessary: but there is no risk in allowing the hay to remain long in the small cocks, as, if properly built, they rarely suffer from winds or rains, unless

less it blows a hurricane. The whole secret of management consists in being able to judge by inspection at what time, and of what dimensions the small or large cocks and winter stacks ought to be formed, which can only be taught by experience.

If the hay is cut when wet, which, in unsettled weather, is sometimes unavoidable, it ought to remain in the swath till it is quite dry: only if the swaths are large, part of them may be spread in the intervals. It will suffer very little in this state for several days, if the weather continues foggy. But on the first serene day, every exertion should be made to have it all put into cocks, as above directed: for it is destruction to it, when once completely dried, to be drenched with rains a second time. In the common practice, much time is unprofitably employed in turning over the hay repeatedly, that it may be in a condition for being put into large cocks; and perhaps only a very small portion is secured in this way, when night comes on; and before next morning the remainder is steeped afresh, which might easily have been prevented by the plan recommended.

Sometimes it may be necessary to open up the small cocks to prevent the hay from becoming musty. The best way of doing this, is not to scatter them on the field; but from the old ones to build new ones, turning them from top to bottom, and from the inside to the outside, increasing the size if necessary, shaking the hay, and putting it loosely on the cocks, as they soon acquire sufficient solidity.

Such hay as is intended for seed ought on no account to be cut when there is the smallest moisture from rain

on

or dew upon it; and when cut it should be immediately put into cocks, if there is the least appearance of approaching rain. This is a better plan than that of binding it into sheaves, and forming these into shooks like corn, a method which is sometimes practiced by careful farmers. These are no defence against rain compared with the cocks; and if once wet, cannot be dried without much additional labour, and great loss of seed.

The plan of making meadow grass into hay is similar to the above. Only it is proper to remark, that no inconvenience will arise, though a considerable degree of fermentation takes place either in the small cocks, or when the hay is stored in the yard, if this fermentation is occasioned only from its natural juices. But it ought not to be removed when in a state of fermentation, otherwise the juices will evaporate, and therefore it is much better that it should be stored for winter consumption even in a pretty succulent state. If the hay is of a coarse quality, or come to maturity before it is cut, this is a real advantage. But it is proper to remark, that if hay is not intended for seed, it ought always to be cut early. The advantages of this, though obvious, do not appear, however, to be duly appreciated by the generality of farmers. Their anxious wish is to have as weighty a crop of hay as possible; and they erroneously suppose that the best means of securing this is to allow the grasses to come to maturity before they are cut: but the consequence is, that the fine juices are expended; the stems become hard and wiry; and the seeds are lost in the subsequent operations. The crop, though perhaps more bulky, is less weighty, and much less nutritious than it would have been, if cut at an earlier

earlier period. But were it otherwise, even a considerable addition to the weight and value of the crop would be a very inadequate compensation for the injury done to the soil, and the loss of after math by suffering rye-grass to remain long uncut. This holds equally true respecting bog meadows.

CHAP.

CHAP. IX.

GRASS LANDS.

NATURAL MEADOWS, &c. PASTURES.

The extent of meadow-grounds in Galloway is far from being inconsiderable; amounting in many farms to more than one-tenth, and probably on an average of the different farms, to not less than one-twentieth part of the whole district. These, however, lie in very detached spots, interspersed among the arable and pasture lands; and are therefore only partially used as meadows, or cut occasionally, when the lands contiguous are in tillage. As the progress of improvement has advanced, many of these spots have been converted into arable land; and when fallowed, and properly manured, are commonly very productive. But the improvement of which they are susceptible, merely as meadows is very seldom justly appreciated, and the means of improving them, in general, little attended to, or imperfectly understood.

Many

Many of these lands, in their natural state, are extremely barren and unproductive; the scanty crops of hay they yield, being of the poorest quality, scarcely affording an equivalent for the arduous labour of cutting and preparing it: and nothing but the urgent necessity to provide fodder for their cattle in winter, and the great hardships often experienced from a deficiency of this article, could induce the farmers to prosecute such unprofitable labour. It is astonishing that this circumstance had not, at an earlier period, led tenants and proprietors to pay attention to the improvement of their meadow grounds. In almost every case it is practicable, at an expence far short of the profits which would result from it. In the few instances where it has been judiciously executed, the hay crop has, in a few years, more than repaid the whole cost of rendering the meadows permanently valuable. Some of the best natural meadows of the district owe their fertility to small rivulets occasionally flooding them in winter. A great part of the benefit of this, however, is lost, by neglecting to distribute the stream judiciously over the whole field, or to water the different parts of it periodically at proper intervals. The good effect of this mode of irrigation is further diminished, from the want of proper drains to carry off the water when the meadow has been sufficiently saturated. (See Irrigation.)

The benefit of irrigation in this, or in any other way, can however be extended only to a very small proportion of meadow grounds. But top-dressing is practicable in almost every case, and commonly much more efficacious. This has been sometimes done with *garden mould;* which appears to be the best of all composts for the purpose. Where this cannot be procured,

ed, or when carriage would be expensive, other rich soils may be employed; which it is seldom difficult to procure, from the sides of dykes, or hedges, or other places where the cattle usually resort for shelter. Any gravelly or loamy soil whatever, adds not a little to the fertility of meadows: but the benefits are much enhanced, if the land is fallowed; and lime, dung, shells, marle, or ashes, mixed with the soil, and properly incorporated before they are spread upon the meadow. Dung, ashes, or any specious of calcareous manures, ought never to be employed alone as a top dressing for meadow grounds. It would be a good expedient to have an inclosure for hogs, feeding them with cut clover, potatoes, &c. to enrich a piece of ground intended to furnish materials for top-dressing. But resources in abundance will present themselves to every farmer of the most ordinary capacity, when he bestows that attention on the subject which its importance certainly merits.

When the soil of meadow grounds consists chiefly of a stratum of peat earth, of which the vegetable substance is imperfectly decayed, a circumstance which is very common in Galloway, they remain good for nothing, either as meadows or pastures, till the peat soil is decompounded. This, however, may in a great measure be accomplished, by top-dressing with calcareous manures, and afterwards spreading upon them rich earth. Such improvement, it must be granted, is very expensive; but the quality of the soil is so completely changed, and the subsequent crops become so abundant, as in a very short time to make ample compensation. The partially decayed vegetables near the surface undergo complete putrefaction; the peat is decompounded,

 and

and the soil afterwards becomes a fine rich loam. By these means, the poorest meadows may be made to yield from one and a half to two tons of hay per acre, at a very moderate computation. And the hay of such meadows is improved in quality no less than in quantity; being esteemed as fodder for black cattle, not inferior to clover and rye grass.

White and red clover, in fact, grow spontaneously upon them in their improved state, though not a vestige of either had appeared before: a circumstance which is very difficult to be accounted for, unless we admit that these grasses had previously existed, but were so minute as to remain quite imperceptible, without more accurate inspection than had ever been bestowed.

In moor farms, where the situation is so elevated, that crops of any kind seldom come to maturity, and where dung can easily be procured, it would be a better practice to use it in compost for a top dressing to meadows, and pasture lands, than to attempt extending the tillage. And in places where calcareous manures cannot easily be obtained, peat ashes, whose virtues are nearly similar, might also be employed with the greatest advantage. Here, however, notwithstanding the frequent failure, and sometimes total loss of their crops, the farmers injudiciously persist in cropping; and the application of manures for the improvement of grass lands, though much more profitable, rarely engages their attention.

Till very lately, top-dressing of arable lands, unless with a view to subsequent tillage, was never thought of by farmers. Fields, the most broken and rocky, of thin

thin and scanty soils, where the arable consisted of small detached spots, and had been completely exhausted by previous cropping, received fresh manures only for the purpose of preparing them again for the plough.

Sensible of the pernicious consequences of such a system, proprietors have, in a few instances, restricted their tenants from cropping such lands, and granted an allowance of lime, to be applied for the improvement of the pasture merely: and in every case where this has been practised, the good effects of it are very conspicuous.

The pasture, even of the finest crofts is improved not a little by spreading lime on the surface. On lands which have been completely exhausted, and where lime ceases to be of any utility whatever for cropping, still it acts in some degree as a restorative, when they are employed solely for the purpose of grazing. In this case, however, it is of great advantage to stock very lightly, or to leave them for a season without any stock at all, that the vegetables decaying, and incorporating with the soil, may afford materials for the lime to act upon; which in some measure answers the same purpose with dung. Stocking lightly on such lands cannot be too strongly recommended, whether they are limed or not, until they are brought into better condition. But it is on lands which have never been in tillage, unarable knolls, broken heath, covered-fields, in their natural state, good for almost nothing, that the effects of calcareous manures appear to the greatest advantage. The powerful virtues of calcareous manures upon virgin soils, are now well known to every intelligent farmer: and when these consist chiefly of decayed vege-

tables, as must always be the case, where they had long remained covered with heath, furze or coarse grasses, seldom eaten by the cattle, if a sufficient quantity of calcareous manure has been applied, they are converted into fine loams, little inferior to croft lands.

It is not, however, to be expected, that farmers, unless they have long leases, or large capitals, will undertake such expensive improvements, without some encouragement from the landlord, where the grounds are not susceptible of tillage, or where they are debarred from breaking them up. But almost in every case, it would be the interest of the landlord to grant such encouragement; as the improvement in this case is permanent, and the lands cannot afterwards be abused, as too often has been done when they are subjected to tillage. It is not indeed, presumed, that the virtues of lime will remain perpetually in the soil, even under pasturage; but it is well known that any lands which have a favourable sub-soil, if once brought into a high state of fertility, will continue very long without any apparent diminution of their value, and often with a real increase, by the manures constantly afforded from the great number of cattle which they pasture. This is evidently the case in croft lands; and the same thing may often be observed in out-field lands, or in moor farms, where particular spots, naturally of a kindly soil, have acquired astonishing verdure, merely from the sheep or cattle resorting to them, much more frequently than to the other parts of the farm.

CHAP. X.

GARDENS AND ORCHARDS.

MANY of the proprietors have excellent gardens, and orchards sufficiently large for their own accommodation, where in favourable seasons all kinds of fruit adapted to this northern climate, are produced in great perfection. There are besides, a few small gardens and orchards, in the possession of tenants, the produce of which is intended for the market. But though the soil and climate in Galloway seem to be as well adapted for fruit trees, as they are in any other part of Scotland, yet it is doubtful whether the cultivation of gardens and orchards to a greater extent, would turn to a profitable account. Obnoxious to many injuries from spring and autumnal frosts, winds, rains, blights, and depredations of the caterpillar, the produce is always

pernicious; and the profits of one good season are often counterbalanced by two or three bad ones which follow. They merit, however, the attention of farmers, as a cheap and innocent article of luxury. Some proprietors furnish their tenants with fruit trees for their gardens, when they are willing to be at the trouble of cultivating them. But from the scarcity of fruit in the country, and the idea that the plundering of an orchard is a very venial trespass; such as *do* cultivate them, frequently *do not* gather the fruits. In this we believe there is nothing peculiar to Galloway.

Nurseries.

Besides the nursery already mentioned, belonging to the Earl of Selkirk, which is now let to a tenant, there is one at Gatehouse of Fleet, on the estate of Mr Murray of Broughton, consisting of about ten acres: one at Newton Stewart of three or four acres: one in the vicinity of Stranraer nearly of the same extent: and one near the bridge-end of Dumfries.

Some proprietors also cultivate small nurseries for extending the plantations on their own estates.—All these appear to be very well managed, which may enable those who are acquainted with this branch of agriculture to form a calculation of the number of plants raised annually, and of the profits arising from such as have been specified. The demand for young plants appears to encrease progressively with the extension of nurseries, and a sufficient number have not yet been produced in the district to supply the exigencies of those who are forming plantations: Hence we may form some idea of the great exertions which are made by proprietors in this species of rural improvement.

CHAP. XI.

WOODS AND PLANTATIONS.

When any of our southern neighbours do us the honour to make tours into Scotland, the denuded aspect of the country seldom fails to attract their notice, and conveys, perhaps, no very favourable idea of the state of its improvements. Galloway, in common with other districts, has often been represented as very deficient in woods and plantations. It has indeed no large forests; few of its woods or plantations are of great extent: yet, if these are compared with the extent of the district, they will be found to be, in reality, more considerable in this than in many other districts of the kingdom; but as they lie very detached, are often concealed in glens and hollows among the mountains, and rarely appear in

the form of extended belts and hedge-rows, they do not strike the eye of a traveller in passing through the country.

Few countries appear to be so well adapted by nature for planting. Vestiges still remain which prove that the greatest part of Galloway had once been covered with woods. Trunks of trees of large dimensions are found in the mosses every where, both in the high and in the low country. Many of the mosses, it is highly probable, owe their origin to trees falling into decay. The roots and decayed trunks of old trees are also found on the sides of the mountains, sometimes in very elevated situations, where no other traces of woods now remain; and where it is believed, though certainly on no good grounds, that trees could not now be reared.

The natural woods, however, have gradually disappeared through the district, and from the careless and injudicious management of those which are left, there is reason to fear that a lamentable scarcity of this necessary article will occur before the new plantations grow up to supply the old ones, which have been often very inconsiderately cut down. The quantity of timber, fir excepted, is still, however, more than sufficient for the use of the inhabitants, and a good deal from time to time is exported.

In the Nith and Glenkens districts, in the parishes of Bruttle, Anwoth, Kerkmabreck, and Minnegaff, the copse woods are pretty extensive; these, with what is thinly scattered through other parishes, may amount to about 3500, acres. The copse woods in Wigtonshire

shire are very inconsiderable, not exceeding three hundred acres.

These consist chiefly of oak, intermixed, however, with ash, birch, elm, beech, and a few trees of other species. Copse woods are usually cut between twenty and thirty years of age, where the situations are favourable for their growth. Their value at this age arises chiefly from the bark, much of the wood being fit only for charcoal, which, with part of the wood and bark, is exported to the north of England. A gentleman* who has had much experience, and is a very accurate observer, condemns the practice of cutting so early. Even in the most advantageous situations, he remarks that it is most profitable to cut them at thirty-five or forty. Their progress in growth is more from twenty to thirty than in the first twenty years, and they still continue to advance rapidly, though perhaps not quite in the same ratio to the age of forty.

It was the practice formerly, on a sale of woods, to reserve a great number of standard trees, such as were most thriving and best sheltered. Few of these are now spared, and even the venerable oak, the pride of our forests, and bulwark of our island, rarely claims an exemption from the common fate of less valuable trees.

The arguments made use of for not leaving standard trees are plausible, but not solid. They are liable, it is said, when deprived of their shelter, to be blasted by the winds, and though before in a very thriving condi-

* Thomas Maxwell, Esq. of Drumpark.

tion,

tion, soon lose their promising appearance, and disappoint the hopes of the proprietor—they also occasion a material loss by injuring the young shoots from contiguous trees; so that the whole wood on a subsequent sale is not more valuable than if no standard trees had been left. This, however, will never happen, when the standards have been selected with any degree of judgment. We are warranted to assert from the authority of those who have had much experience, (and practical knowledge alone can determine the question) that when the standards left are seedlings, or thriving trees, short and thick in their trunks, in situations not much exposed, that little mischief arises from being deprived of their wonted shelter. Though they may be apparently unthriving, and make little progress for seven or eight years, their growth afterwards is so much accelerated, when the contiguous shoots have sprung up, that they very soon regain all that they had lost. In woods which have been well managed, such trees, to the amount of eighty or ninety per acre, may commonly be found, which it is adviseable to leave as standards. It seems no less proper, both in regard to taste and œconomy, to leave groupes of the most thriving trees in different parts of the wood. It need not be mentioned of what immense value old oaks are now become in this country, so that abstracting from all ideas of taste or patriotism, the practice of cutting woods early, or of leaving no standard trees, cannot be justified on the principles of true oeconomy. It admits, indeed, of no apology, save as the last resource of the thoughtless spendthrift to redeem his mortgaged estate, or as a necessary expedient to mitigate the severity of a deed of entail, by enabling the proprietor to make some provison for the younger branches of his family.

Though

Though many of the copse woods in Galloway are thriving, yet very few of them are so regularly or closely planted as to enable us to form any accurate estimate of their value. Twenty acres have been sold lately for 600l. Eight acres, consisting chiefly of oak, at thirty years old, have been sold at 900l.; standards being reserved to the value of at least 100l. About one hundred and fifty acres nearly of the same age have been sold for betwixt 6000 and 7000l. These, however, could afford no just criterion for the average value of the woods in the district.

Many of the copse woods have suffered materially from inroads of the cattle, and sometimes by other depredations. This is one of the many instances, where a little ill-timed parsimony is productive of incalculable loss. From not keeping the fences in repair—admitting cattle into the woods at too early a period—neglecting to prune, and to cut overworthless trees, or to destroy brush-wood, thousands of acres of valuable woods are rendered unproductive, and exhibit nothing but trees thinly scattered amidst useless wastes, or thickets of bramble.

It is pleasing, however, to perceive, that a taste for planting, one of the most important improvements of which the district is susceptible, has, for a series of years, appeared among many of the proprietors, and is daily becoming more prevalent. Few districts in the kingdom present a greater variety of situations admirably adapted for ornamental planting, or where profit and ornament may more easily be combined. The large proportion of lands not capable of tillage, nor valuable even for pasture—the broken surface of the country

rising

rising into hills extremely varied in their shapes and dimensions—the steep banks, craggy knolls, useless wastes, and heath-covered mountains, which, in their present state, are objects of deformity, might thus be converted into the greatest natural beauties of which any country is susceptible: And when thus improved, would afford a very considerable source of income: and by the shelter afforded, greatly ameliorate the condition of all the adjacent lands.

It must be acknowledged, however, that in many places where it would be desirable to form plantations, the task of rearing them is very difficult, and till lately, was considered as altogether hopeless. This is especially the case in situations bordering upon the sea, and much exposed to the westerly winds. The difficulty is thought to be occasioned by the salt spray, injurious, it is said, not only to trees, but also to corn and other vegetables. This appears, however, to be a very fallacious idea; for if the salt spray were really detrimental to plants, its effects would extend to sheltered situations near the sea coast, as the spray, like drifted snow, must fall on the lee side of a bank, fence, or little hill, more copiously, perhaps, than on the side which is most exposed to the storms. Trees, however, it is well known, thrive extremely well in the immediate vicinity of the sea, provided they are sheltered by any means whatever. And if a few trees can once be raised in the side which is most exposed, there is no difficulty in carrying on the plantation, though the spray, in every storm showers down upon it; whilst at the distance of many miles from the shore, and where the spray never reaches, trees have the same stunted growth, and blasted appearance, so common on the sea coast,

coast, when they are much exposed to the winds, which, in this country, blow a great part of the year from the west, and south west.

The valuable properties of the *pinaster*, in resisting the westerly winds, have been long known, aud very fairly tried on the shores of Galloway. This important discovery was made by the late Earl of Galloway, who planted some of them almost on the sea beach, which are now large and flourishing trees. Their great superiority to other trees, in this respect, may also be seen in plantations of Colonel M'Dowall and Sir William Maxwell, and particularly in a small island on the south west point of St Mary's isle, where they are very thriving, though other trees in a situation so exposed, would have certainly perished.

Next to the pinaster, the Huntington willow seems best calculated to resist the baleful influence of the westerly winds; and it possesses the advantages of being cultivated at far less expence, and of growing faster than the pinaster, or almost any other tree. The wood and bark of it are also of uo inconsiderable value. These obvious properties of the Huntington willow seem to have escaped the notice of planters; for although individual trees are to be fouud, either growing detached, or interspersed through plantations, yet we have seen them no where in rows or belts, for the purpose of protecting other trees from the westerly winds; though for this purpose it seems highly probable they might vie even with the pinaster, where the soil is favourable for their growth. They are supposed to require moist soils, but grow equally well on any good soil moderately deep.

The

The oak, the elm, and the ash are peculiarly adapted for the soils of Galloway, and will ultimately repay the planter better than almost any other species. The plane and the birch from their early foliage in spring, the beech, from retaining its leaves through winter, when interspersed with evergreens, afford a beautiful variety in plantations.

The larch from its rapid growth, and the excellent quality of the timber, is preferable to the whole tribe of evergreens. In the plantations of the low country it commonly far surpasses all the other species of pines; and though the experiment has not been made in Galloway, it is said also to thrive in a greater elevation. Ignorance of its valuable properties, or partiality for Scots firs (which except as nurses, ought not to find a place in any plantations) had long occasioned the larch to be neglected, otherwise Galloway might have now been supplied with fir timber of its own growth, fit for almost every purpose where foreign timber is required, and more than sufficient to supply all the demands of the country. Larches have lately been much cultivated, though chiefly along with other trees, and often as nurses. This is by no means improper; as nurses they are indeed expensive; but the wood being valuable, even when cut early, they are perhaps more profitable for this purpose than the Scots fir, the weedings of which are often good for nothing. It appears adviseable, however, frequently to form plantations entirely of larches, as when planted along with other trees they soon overtop them, and thus suffer materially from the want of shelter.

The

The Norway pine is much cultivated; but often deceives the expectations of the planter. After shooting vigorously for fifteen or twenty years, its growth is suddenly checked, and it soon perishes. In all those soils, very common in Galloway, which consist of a thin stratum of earth on a bed of schistus, this misfortune sooner or later takes place.

The plantations on the estate of the Earl of Stair are not extensive. It would be unpardonable, however, not to notice those around Castle-Kennedy. The beautiful and picturesque scenery of this delightful spot cannot fail to strike the most inattentive observer. The smooth lawns, sweet glades and vistas opening a variety of striking views,—the fine lake, with its islands and peninsulas, and the sloping banks, curiously modelled by art, according to the taste of the times,—it would be foreign to our purpose to describe. Many of the trees are of a most luxuriant growth, and the beech hedges, seventy feet high, are not excelled perhaps by any in the kingdom. These were chiefly executed about the beginning of last century, by John, Earl of Stair, distinguished for his talents as a statesman, and for his exertions in promoting the union of the two kingdoms. They were afterwards much improved by his son and successor, the celebrated Marshal Stair, and are kept in good order by the present Earl.

Among the plantations of the district, those of the Earl of Galloway deserve particular notice. Around his beautiful seat, the pleasure grounds are very extensive, and the plantations in clumps and belts, are continued on the rising grounds along the coast of Wigton bay, to the distance of several miles. These, with the other

other plantations on his Lordships estate, amount to upwards of five hundred acres. All were executed during the life of the late Earl. They add much to the beauty of this fine part of the country which had before very few vestiges of planting.

The plantations of the Earl of Selkirk are more extensive. They cover upwards of eight hundred Scotch acres, and are so finely diversified, as to convey the idea of a still greater extent. The general plan upon which they are laid out, was formed, and the execution of them begun, by the late Earl, about thirty-five years ago. To his Lordship's taste they do great honour. Although designed at a period, when the public taste in matters of this kind, was far less fastidious than at present, it may safely be asserted, that they will bear to be tried by the principles even of Mr Price.

The late Earl had executed only a small part of the plan when, in the year 1786, he transferred the management of his estate to his son, Lord Daer, who immediately made the most judicious arrangements for carrying on this branch of his improvements. The estate was most accurately surveyed, and all the ground intended to be planted marked out. Perceiving, that many advantages would arise from raising the plants upon the spot, he formed a nursery of about twenty acres, which was very speedily stocked with plants suited to the soil and climate. A portion of the ground previously marked out, varying in extent according to circumstances, was then inclosed and planted annually; beginning with the grounds most contiguous to St Mary's isle, and gradually extending to the remoter parts of the estate. This mode of proceeding, has been

been steadily pursued for upwards of twenty years, and the plan has been now nearly completed by the present Earl.

By the method described, it will appear obvious, that there would not only be a great saving of expence, by the constant employment afforded at all seasons, to nearly the same number of labourers; in the management of the nursery; in forming inclosures; planting, weeding, pruning, &c. but, what is of still greater consequence, that the labourers having acquired skill and dexterity, by long experience under the direction of an intelligent overseer, would execute every part of the work with much greater judgment and precision.

Previous to these improvements, the country in the neighbourhood of Kirkcudbright was extremely naked, and the astonishing alteration produced in the appearance of it, can only be conceived by those who have had an opportunity of seeing it in its former, and in its present state; but abstracting altogether from ornament, it is probable, that they will ultimately be a source of profit.

To those who take an interest in matters of taste, a more minute account of the principles, which have been attended to, in laying out the plantations, may be acceptable.

Considerations of utility and ornament, concurred in determining the selection of unarable banks on the steep sides of hills, and of rocky knolls near their summits. Steep banks which are inconvenient for tillage are of course less valuable, and may be given up for

planting without so great a sacrifice, as land of equal fertility in other situations; while, on the other hand, there is no place where trees thrive so well, or where a wood of moderate extent, can produce so much picturesque effect. Upon the summits of high land, though trees do not grow so rapidly, they produce a shelter which adds to the value of the adjoining lands. At the same time, it may be observed, that in any hilly country, fringes of wood irregularly skirting the horizon produce an interesting and varied scenery. In laying out each plantation, the object chiefly attended to, was to preserve the effect of a natural wood; and for this purpose, the outlines of the plantation, were adapted to the natural form of the ground. In most of the natural woods which remain in Galloway, we may observe, that the trees and brush wood, extend as far as the ground is steep or rocky, while the land fit for tillage has been cleared and cultivated; and in consequence of the irregular boundary of different soils, we find glades of cultivated land, projecting into the woods, and detached woody knolls interspersed among the adjacent fields, producing altogether an interesting and singularly beautiful variety. The picturesque effects, which had thus arisen from accident, it was Lord Selkirk's aim to imitate, and in most instances the means of effecting this, were pointed out by the marks of the plough. In the former rude state of agriculture, little pains had been taken to bring into cultivation, any land which was not naturally accessible, and the steep or rocky banks had been left untouched in the midst of arable fields. If these neglected patches could have been planted exactly to the boundaries which the plough had reached, they would have produced the same effect as if the natural wood had never been cleared. The difficulty

difficulty arose from the necessity of fencing the plantation effectually from cattle. To inclose every bank or knoll separately, would have required an immoderate extent of fences. This was obviated by inclosing within one fence a groupe, or chain of knolls, along with the arable land which was interspersed among them, and which was in some cases left unplanted as glades in the woods, and sometimes was planted, in order to give dress to the different knolls, which might otherwise have appeared too unconnected. The boundaries of the plantations, however, were in all cases carried as nearly as possible along the boundary of the arable land; and though it afterwards required a greater length of fences to follow the intricate varieties of the ground, yet the picturesque effect which was gained, was thought a sufficient inducement for this sacrifice.

In one respect the effect has not proved equal to the intention. The fences which divide the plantations from the pasture fields, mark their termination with a distinct and hard outline, very different from the imperceptible gradation observed in the edges of natural woods. To remedy this defect, the present Earl of Selkirk has lately removed the fences of some of the plantations which are approaching to maturity, making new fences at a little distance concealed within the wood, and leaving a verge on the outside open to the field. The trees have attained to such a growth, that those which are left exposed to the pasturing stock are not likely to suffer. It would have been better, however, and more easily executed, if this interior fence had been made at the first, and the fence along the extreme boundary of the plantation had only been of a temporary nature, to be removed as soon as the outer verge of trees and brush-

wood had attained a certain degree of maturity, and also if this outer verge had been intermixed with a greater proportion of under-growths than the rest of the plantation.

The woods and plantations on the estate of Mr Murray of Broughton, amount to about five hundred acres: and considerable additions are made to them every year under the direction of his trustees. The vast tracts of land on this estate well adapted for planting, and comparatively of little value for other purposes—their convenient situation for water carriage, and the immense accession of ornament and utility, to a country in many places bleak and barren, from plantation, are inducements which will not escape the discernment of the proprietor: so that it is presumed when he is of age, this species of improvement will be carried on upon a still more extended scale*. Whole farms of this estate, it seems probable, would pay better in plantations, than under any other management.

Within the last few years, about four hundred acres have been planted on the estate of Orchardton by Mr Douglas the present proprietor, whose farther views of the same kind, are only to be limited by the quantity of ground less suited for other purposes, of which a very

* Mr Murray's minority expires next autumn. From his good sense and extensive information, combined with no common ardour for the pursuits of rural life, we are justified in entertaining the idea, that his estates in this and the sister kingdom will, by his spirited exertions, soon receive many of those useful and ornamental improvements for which they are peculiarly adapted.

considerable

considerable tract remains. The planting of this tract has been, and continues to be in yearly progress.

The extent of the natural woods of Torr, Orchardton, Almorness, Kirkennan, and others along the banks of the Urr, cannot easily be calculated. They are very numerous and dispersed—The steep and broken grounds, which frequently occur, are often seen richly clothed with hazle, holly, hawthorn, and honysuckle, and studded at intervals with oak and ash of considerable age and size *.

It would extend this article to too great a length barely to mention what has been done by many other proprietors both in the Shire and Stewartry. In consequence of this, the country is assuming a very different aspect, and the good effects of it are felt by the farmers in a variety of conveniencies, which before could only be procured at great expence from places at a distance.

* The mountains of Bengairn and Skreel, and the bold ridges of Potterland, Barchain and Kirkennan, (the last of which is shaded with luxuriant coppice, and crowned with an overhanging precipice of considerable elevation) form the northern boundary of this narrow, but beautiful, line of coast, and quite sequester it from that part of the Stewartry through which strangers are accustomed to pass. The Solway bounds it on the south, flowing in upon a deeply indented and varied shore, fringed with coppice to the water's edge. The lofty mountains of Cumberland terminate the view, and seeming to inclose the Solway in their ample range, give it all the effect of a magnificent lake. The scenery of this district, which is highly beautiful and picturesque, is much less known than it deserves. To a lover of landscape it is not inferior, perhaps, to many of the scenes which are the most celebrated and admired.

Most of the plantations mentioned have been too recent to furnish data for ascertaining the profits arising from planting in any given soil or situation. But in some other parts of the district, there are old plantations which have been sold lately, and prove that in favourable situations the returns are very high, and far exceed the profits which could be expected from any other mode of management.

Plantations of Scots fir have been lately cut, the best of which were estimated at from L. 300 to L. 400 per acre under fifty years of age, though the original value of the land did not exceed three shillings per acre annually. One small plantation is said to have reached betwixt L. 600 and L. 700, sold in the planter's life-time. These had been previously thinned by different weedings, so as to leave about 430 trees on each acre. There are no plantations of larches which enable us to determine their value. A detached tree on the banks of the Cairn, thirty-seven years old, measures about fifty cubic feet. The above calculations, it is admitted, would be far too high for any extensive plantation, even under the best management, and in the most favourable situations. But after every reasonable deduction, sufficient reasons would still remain to stimulate proprietors to embark in such undertakings. The immediate expences and the distant returns form, it is true, very serious objections. When executed by contract planting costs L. 5 per acre, the trees being placed at the distance of three feet, which nurserymen usually recommend. This distance in exposed situations may be very proper; but to adopt it as a general rule, would, we apprehend, be very injudicious. Planting at four feet distance, we are assured by persons who have had much

much experience, will answer as well, or even better. To plant more trees than necessary, ought never to be recommended from the idea that many of them decay. These ought always to be replaced for the first two or three years at least. With this additional expence, which ought always to be provided for in the contract, if the distance is four feet, the whole may be done for L. 5.—Even the ordinary term of human life, it must be confessed, in many cases, would be too short to promise indemnification to the planter. This is the circumstance which deters so many from attempting it. But do not men usually lay plans for posterity? They construct their buildings to last for ages—they add field to field, and farm to farm for the benefit of their heirs—they entail them to remain in their families, to perpetuate their names—they fear to contract debts from the idea of injuring their successors. It is therefore a narrow and short-sighted policy, not to *plant* also, if they have any wish to make provision for posterity, though this should bring no immediate accession to their yearly income. Or if they even propose to spend their whole fortune during their lives, a better expedient could not be adopted, than to make their plans of improvement and prodigality thus go hand in hand; so that whilst their acres are reduced in number, they may increase in value, and thus afford a probability, in case they should have erred in calculating the rate of expenditure, as prodigals very often do, that the last acre shall not be brought to market a little too soon.—It has been remarked, that few estates in Galloway have remained long in the same families, but such as have been entailed, or provided with woods.

CHAP. XII.

WASTES.

The waste lands in Galloway, consisting of bogs, moors, and mountains, comprehend a very large proportion of the district. At a moderate computation they may be reckoned at one-third of it. But to state the account accurately, even though we had access to the surveys of every individual farm, would be impossible; for the transition from absolute barrenness to what would be esteemed good pasture lands, proceeds through so many intermediate stages, and by such insensible gradations, that to fix the limits would still be arbitrary, and give rise to great diversity of opinions. Two or three large farms are let for less than sixpence per acre, and one for the moderate rate of twopence per acre. Many of the large mountainous farms afford, however, good pasturage; rearing, as has been mentioned, moor sheep of a pretty large size, and frequently fattening them for the butcher.

The

The principal improvements of which the waste lands sre susceptible consist in *inclosing*, draining and planting.—(See these different articles.)

BOGS, *provincially* MOSSES OR FLOWES.

The extent of these almost exceeds credibility, being probably not less than one-tenth or one-twelfth of the district. In some places they stretch out with very little interruption, to the length and breadth of several miles. Their depth is often also very great, being from 10 to 20 feet, and in some cases, probably, still more. They are commonly, however, from four to eight or nine feet deep, and sometimes not more than one or two. In the lower parts of the district, they often rest on a bed of marle, but much more frequently on a substratum of clay.

Such vast tracts of moss, in its natural state absolutely good for nothing, afford the most ample scope for exercising the talents, and ingenuity of spirited improvers: and from what has already been attempted, it may be presumed on good grounds, that the improvement of such lands would, in many parts of the district, be a very profitable speculation. Extensive *flowes* are to be found lying almost contiguous to the shore, where shells or lime may be procured at a moderate expence; others with gravel hills in their borders; and not a few with clay and marle (as we have said) immediately under them; and at no great depth from the surface. By the judicious application of any of these, with a moderate

derate quantity of dung, it is now sufficiently ascertained that peat bogs, of any depth, may be converted into good arable lands, or valuable meadows, at an expence which a few succeeding crops will repay. It is, however, to be understood, that the bogs can be made sufficiently dry, and the climate be so favourable, that the crop may always be expected to come to maturity.

Flow mosses have been improved in various parts of the district, though rarely on an extensive scale, and never with that extraordinary success which has been experienced by a celebrated improver in a neighbouring district, the account of whose operations has already been communicated to the public. His plans have been adopted in a few instances, but the expence of lime operates as a strong objection to the use of that manure, in such a copious manner as seems to be necessary to give it its effect. Indeed, from the experiments made in Galloway, lime does not appear to have a very good effect in decompounding moss, unless the use of dung has either gone before or followed its application. But we have no intention to impugn the doctrines laid down by this gentleman, or to question the accuracy of any of his statements. His exertions are very creditable to himself, and the account of them may be of great utility to the public. How far the accounts subjoined contain new or useful information, the Reporter, whose observations on this species of improvement have been confined to the two counties, does not presume to determine.

Paring and burning in some cases, as shall be noticed, have very properly preceded every other improvement. This ought, perhaps, to be done in almost every case where

where calcareous manures are expensive, and where there is a sufficient drain for carrying off superabundant moisture. The moss on the surface is often a barren flow, which it is much easier to destroy than to decompound, or to bring into a state of fertility by any means whatever. When this is the case, the ashes produced by burning are indeed of little value, but the moss below is always of better quality, and the subsequent operations are much more easily executed. (See paring and burning.)

Where paring and burning cannot conveniently be employed, bogs are frequently brought into cultivation by planting potatoes upon them, and the following appears to be the best method of doing it: The ground is first levelled, the *beds* or *ridges* being at the same time marked out in straight lines, five feet in breadth, with intervals of two feet for covering them. Furze or brushwood are put into the *peat pots*, and covered over with the turf dug up in levelling the moss, to prevent the horses from sinking in the future operations. The ground is afterwards dunged at the rate of 50 cart loads per acre, and the potatoes planted in what is termed lazy beds. The sets should be placed at the distance of 9 or 10 inches in all directions, and of a species of potatoe which grow to a large size; for the produce will degenerate in size, but improve very much in quality. They ought to receive a second covering when the leaves begin to appear on the surface; and both the first and second covering be given more plentifully than on other soils. If the quality of the moss is good, the crop may be expected to amount to four ton per acre. When the potatoes are taken up, the turfs which are not dissolved, should be thrown into the hollow

low places, and about a foot dug from both sides of the ridges to fill up the furrows. Another crop of potatoes may be taken the following year, with about half the quantity of dung, and the furrows ought then to be made from the middle of the ridges. By this means the whole moss is dug up, properly pulverized, and prepared for any subsequent crop. Powdered lime is now employed with the greatest advantage as a top-dressing; for if it is used sooner, considerable quantities of this expensive manure will be buried in the furrows, and in a great measure lost. Where any other top-dressing is used, it would be most advantageous to spread it on the spaces marked out for the beds, when the moss is levelled; or if the moss is levelled in summer, the lime may be carted upon it the following winter in time of frost. From any observations which I have had an opportunity of making, beans and potatoe oats succeed best after potatoes, when the moss has only undergone a partial decomposition. John Cathcart, Esq. of Genoch, in the shire of Wigton, a gentleman whose authority is entitled to much respect, and who has practised various methods of cultivation on moss ground, remarks, that in such a state, cole, rape, and turnep are the plants which have been most productive.

The expence of levelling peat bogs cannot be accurately ascertained, as this depends very much on the nature of the moss, and the inequalities of its surface.

Spreading the dung, planting and covering the potatoes, will cost from 3 guineas to 3l. 10s. per acre, the first year, and about 3l. (if a crop is taken) the year following. The other expences connected with this mode of improving, may easily be inferred from the concise and

and accurate account, communicated in the following letter by Alexander M'Lean, Esq.

Mark, August 28th 1809.

Dear Sir,

" According to your desire, I send you an account of the different methods I have adopted for improving moor and moss lands, after a course of considerable practice, and several experiments tried for that purpose.

" All the different kinds of moss that I have reclaimed, I find to answer a very good purpose, if properly treated; and as it is of no value in its natural state but for fuel, the pleasure arising from seeing it covered with rich and luxuriant herbage, is a gratification not to be experienced in the ordinary course of agricultural pursuits.

" The first part of the process of improving what is called flow moss, is to delve it about ten or twelve inches deep, into ridges of twenty feet in breadth, and allow it to remain in that state for twelve months at least, before any thing farther is attempted, in order that the summer sun, and winter frost, may render it fit for receiving manure, by pulverizing the stubborn soil, and cementing the seams of the furrows, into which otherwise the lime would be washed down, and in a great measure lost. The next thing to be done is harrowing, and the most proper time for doing this, and which will have ten times the effect that it would have at any other time, is immediately after hard frost, when the thaw has so far taken place as to have softened about two or three inches of the surface, whilst the moss remains

mains hard below. This answers many excellent purposes, such as preventing the horses from going down, which otherwise they would do, without clogs on their feet, which is a considerable incumbrance to them; it prevents the turfs from being torn up out of their places, and as the rigid cohesive particles of the soil have been separated by the frost, and are in a soft state, it will harrow as smooth as fallow; and if the lime has been spread, will mix it intimately with the soil; but, if it can be done conveniently, I would recommend harrowing before the lime is laid on, which will completely prevent any of it from being lost, and it will easily mix with the soil afterwards. As no *flow moss*, or indeed any substance of pure moss that ever I have seen, or have any experience of, will produce corn without the application of dung or ashes; the next thing to be done is to put it under a crop of lazy-bed potatoes, of which a moderate dunging will produce a very good crop. Every 20 feet ridge should be made into two potatoe beds, and as the luxuriant foliage of the potatoes tends to rot and pulverize the soil faster than almost any other crop, it will produce an excellent crop of oats next year. But as the surface is not level enough for being laid down with grass seeds, I generally take two, and sometimes three crops of oats after potatoes, and by laying two of the potatoe beds together, make the ridge 20 feet broad, as at their original formation. And by ploughing them in the same manner for two successive years, viz. gathering these ridges, the land is laid out in what I conceive to be the best state, 20 feet ridges, with a very gentle curve, and always cleaning out the furrows eight or nine inches deep. This prevents the water from stagnating upon part of the land; which if it is allowed to do, the land will

will produce coarse grass and rushes. The laying out the land in this manner prevents it from being injured from water, and yet does not make it too dry, which is no less injurious. But as dung cannot be spared from the ordinary purposes of farming in sufficient quantity, for any considerable extent of land (as I have sometimes got twenty acres delved in one season) to carry on the method I have described, I adopt a different practice. In place of potatoes, I take a crop of oats, which is produced by a cover of compost made of two-thirds of sharp earth, and one-third of dung, along with the lime, the whole being sufficiently harrowed in, both before and along with the seed, and at the same time sown with grass-seeds along with the crop. In this way there is less labour; a much less quantity of dung will answer the purpose; and the land will be found afterwards in a state little inferior to the former.

"Soils of a mossy surface I generally bring into a state of cultivation by ploughing the land in winter or spring, and letting it remain in that state for a year; and if very stiff and cohesive, sometimes two years before I do any thing more with it. The harrows are then applied, and, after a slight harrowing, the lime is put on, and then it receives another slight harrowing; the first to prevent the lime from going down among the seams of the furrows, and the last to incorporate the lime with the soil. I then let the land remain in that state till the following spring, when a crop of oats is sown and the land sufficiently harrowed; and the consequence is, that a pretty good crop is obtained the first year without any expence of fallowing, and the land is in a much better state afterwards than when that has been resorted to, as the stubborn surface has had time to be completely rot-

ten

ten before being again turned up. Afterwards it will be fit for all the purposes of farming, and that sort of land generally turns out very well, particularly for grazing.

"I have made wonderful improvement upon mossy and boggy land, by draining and top-dressing with shells brought from the sea-shore, and laid on at the rate of thirty cart-load per acre, with one hundred cart-load of earth per acre above the shells. This I consider superior to any other mode of improving such kind of land, where the surface is even. The effects are astonishing either for meadow or pasture. In many instances I have seen land, originally not worth one shilling per acre, by this mode of improvement made worth forty shillings per acre. Query, But where is all this fine earth to come from without destroying a great deal of land? After improving forty acres in this manner with the best effect, far beyond my most sanguine expectation, it will not easily be discovered where I have destroyed any land. In every farm almost there are hundreds of cart-loads of good earth at corners of fields, in old gardens, at the sides of dykes and fences, &c.; the removal of which would not, in the smallest degree, injure the field, and might be of immense value if applied in the manner above described. Burning I would also recommend upon some soils, especially upon an earthy moss; which will produce plenty of ashes, nothing will produce better crops, and if the land is limed before it is laid out in grass it will be found in a very good state afterwards.

Abstract of the Expence of Improving Flow Moss.

Delving, per acre, - - - -				L. 3	5	0
Lime, 70 bushels per acre, at 1s. 5d. per bushel,				4	19	2
Dung, 40 single cart-loads, at 2s. 6d. per load,				5	0	0
Laying on the dung, setting, and covering the potatoes, - - - - -				3	0	0
Seed, 32 bushels per acre, at 9d. per bushel,				1	4	0
Raising ditto crop, - - -				1	5	0
Leading and spreading of lime, 70 bushels, at 6d. per bushel, - - -				1	15	0
Total expence of producing the first crop,				L. 20	8	2
Value of produce, 16 bolls of potatoes per acre, at 10s. 8d. per boll,	L. 8	10	8			
Deduct oats for seed second year, 6 bushels at 3s. 6d. per acre, and 5s. for harrowing, -	1	6	0			
	L. 7	4	8			
Produce (allowing the straw and *draught* for shearing and threshing) 40 bushels, at 3s. 6d. per acre,	7	0	0			
	L. 14	4	8			
Deduct for ploughing 2d year, which will be done with one horse with clogs, 10s. per acre, harrowing, 5s. 5d. and seed 6 bushels, L. 1 : 1s.	1	16	5			
	L. 12	8	3			
Carry forward,	L. 12	8	3	20	9	2

Brought forward,	L.12	8	3	20	9	2
Produce 36 bushels, at 3s. 6d. per bushel, - -	6	6	0			
	L.18	14	3			
Deduct expence of ploughing, harrowing, and seed, as before,	1	16	0			
	L.16	18	3			
Produce of third crop of oats, 30 bushels per acre, at 3s. 6d.	5	5	0			
	L.22	3	3			
Grass-seeds omitted, 6 bushels of natural hay-seed, at 2s. 6d. per bushel, 15s.; 10 lib. of ribb-grass at 6d., 5s. - - -	1	0	0			
	L.21	3	3			
First crop of hay 100 stone (perhaps 200) at 6d. per stone	2	10	0			
				23	13	3
Overpaid when the land is laid out to pasture, - - - - -				L.3	4	6
Value of the land in a natural state, L. 1 : 5s. per acre.						
Improved value, L. 25 per acre; balance,				23	15	0
Profit upon improving every acre of land,				L.26	19	6

Extent of the different kinds of waste lands cultivated, or otherwise brought into an improved state, by Alexander M'Lean, Esq. as above described.

	Scotch Acres.
Of *flow moss* by delving, &c. &c. as mentioned in the report, about - - -	50
Of lands, whose surface consists of peat-moss, by ploughing, &c. - - -	100
Of meadows, whose surface consists of do. improved by top-dressing, - - -	40
Of pasture lands, do. do. improved by top-dressing, - - - - - - -	80
	270

I am,

Dear Sir,

Your most obedient Servant,

(Signed) ALEX. M'LEAN.

On the above account, the Reporter has only one observation to make, that having seen the lands described in the above account in all the different stages of improvement, and under the various crops mentioned, he had the satisfaction to be convinced, from ocular demonstration, of the great success of Mr M'Lean's experiments. The ingenuity of his plans is not more worthy of notice, than the persevering exertion with which they have been carried on for a series of many years, and which, it is presumed, will not relax till the necessary improvements over the whole of his estate are completed.

The extensive improvements executed by Colonel M'Dowall of Logan, display both ingenuity and enterprize, and certainly merit publicity.

Account of Colonel M'Dowall's Improvements at Mull of Logan. Communicated by Mr Shank.

The tract of land on which these improvements have been going on since the year 1800, is one of the most unpromising in point of appearance, being a sterile heath-covered moor, with a soil almost wholly consisting of peat, lying open to the southerly and westerly blasts from the Irish Channel, by which it is half surrounded, and upon which there is no trace of human industry to prove the attempts of any former age.

The subsoil, however, is of a superior description, being a sort of tilly loam. Betwixt this and the peat surface, there is a thin stratum or rhind, of nearly four inches, almost, if not altogether, impervious to water, and unless broke through and decomposed, improvement would be hopeless. As the peat surface is of considerable depth, it is judged expedient to pare it with the plough, and afterwards to dry and burn the portion so taken off; leaving still, however, a few inches of moss as proper to mix with the subsoil. The ashes are sometimes carted off, in order to be used as manure whenever convenient; at other times, they are scattered in the usual manner over the surface.

A plough of great dimensions and proportionate strength is then set to work.

This implement is drawn by six stout horses, whose united powers are not more than sufficient for the task. The object is to break up completely the stubborn rhind which separates the soil and sub-soil, and to raise up

up a portion of the tilly loam which has hitherto lain dormant and concealed. The difficulty of this operation is much increased by the quantity of stones found under the surface, and it is surprising to see of how large a size these have been turned out by the plough. This is called *Trench ploughing*. A large break-harrow, drawn by four horses, is then applied, the stones are taken off; and it is considered adviseable to plough across with the same plough. This raises more stones to the surface, and mixes and incorporates the soil now under preparation, to the depth of from fourteen to eighteen inches. After being again harrowed it is in a proper state to receive lime, a copious dose of which ought to be reckoned indispensible. It is then ridged up as quickly as possible, and remains in this state till seed-time. It is necessary to admit that the operations of this laborious fallow are in general too much hurried. Except the paring and burning process, the whole is executed betwixt harvest and seed-time, whereas, were the fallow to proceed through summer, it would be done more perfectly; and the soil would receive much additional amelioration by exposure to the atmosphere with both a summer and winter sun.

The quantity of lime too appears small, being said not to exceed sixty-five Carlisle bushels per acre; but this the respectable proprietor accounts for by saying that he intends again to lime upon the surface, after the land has been some time laid out into grass. This method he considers as œconomical; perhaps with reason; for if a very large quantity of lime were applied to the fallow, a considerable proportion of it would quickly sink down beyond the reach of an *ordinary* plough; and likewise out of the reach of the roots of

corn and grass; whereas by applying lime several years afterwards, upon the improved sward, he hopes that the beneficial effects of it will *ultimately* be better obtained.

Oats are the only corn crop raised, bear or big being found not to answer, and wheat not being judged prudent to attempt. The potatoe oat is generally sown; though, for a *first* crop, some of the hardier varieties might be preferable. Making allowance for the former state of the soil, the crops are certainly beyond expectation. With a moderate quantity of dung green crops likewise succeed extremely well: even carrot and Swedish turnip; the former being of a most agreeable quality for the table. In 1807, about an acre and a half of carrot was raised, and many of the roots measured from ten to twelve inches in circumference. This, however, is too expensive a crop to be raised to any extent, from the extraordinary and constant growth of chickweed, which prevails in mossy soils, and which causes a very great expence in weeding, no other method being yet found out in this country for destroying it.

After one crop of oats, producing about thirty bushels per acre, a green crop with dung is taken, and the land is sown out with a second crop of oats, which may produce nearly forty bushels per acre. The grass seeds succeed well, and a decent hay crop is generally obtained. The pasture also continues productive.

The first field attempted to be improved is an exception to the latter remark, the soil having been imperfectly pulverized, the lime neither in sufficient quantity, nor

nor mixed with the soil, and no dung to be procured wherewith to green crop. In this unhusbandmanlike stile it was sown out with the very first crop of oats, hay being much wanted. The grass seeds consisted of rye-grass, red and white clover, and one ridge of foxtail in place of rye-grass. The red clover soon disappeared, and most of the rye-grass and white clover, except in small spots most congenial to their growth, probably from a larger proportion of ashes or lime being left on those parts, but the ridge of foxtail (alopecurus pratensis) has all along maintained its ground, and produces an annual fair crop of grass, amongst which the heath has not yet been able to introduce itself in any comparative degree, although this ridge received no better treatment than the rest.

By much the greater part of this field, however, is quickly resuming its native sterility; but the Colonel allows it to remain as a contrast to his subsequent management.

The whole extent of land thus improved, and to be improved, measures about 185 Scotch acres. The proportion already (1808) improved, or at present under preparation, is upwards of eighty acres, being divided into seven fields of different sizes. The fences are partly stone dyke, and partly hedge and ditch. To plant thorn hedges on such a soil, and on such an exposure, would not long since have been looked upon as want of judgment and folly, but with the care and attention bestowed, it is really astonishing to see the progress they have already made.

These lands are too distinct from the Colonel's other farm steadings to receive any manure therefrom, and at commencement

commencement of the operations here, no steading was erected, and no means prepared of obtaining a supply of farm-yard dung. These essential requisites are now provided, and the improvement is going regularly on, though not rapidly or extensively, as the object has been for some time to execute these ameliorations in the most substantial and judicious manner.

It is apprehended that many tracts, apparently very barren, might be improved by similar means. An idea has been formerly entertained, that the subsoil of moorish land was extremely prejudicial to vegetation in general; but this, like many other prejudices, is becoming obsolete, or rather reversed in practice; for it is frequently found to be highly advantageous to raise up and incorporate a proportion of it with the soil, especially when aided by calcareous manures—applications absolutely necessary in all such improvements. Besides, by breaking up the obdurate rhind, which is frequently found to divide the soil and *subsoil* on moorish lands, the surface is no longer chilled by a constant humidity, but being ameliorated to a more considerable depth, fertility is greatly augmented, and though there is a sufficiency of moisture to support vegetation, there is little danger of superfluity.

The expence is no doubt great, and can only be expected to be incurred by an opulent proprietor, or a tenant whose lease is of more than ordinary duration. Indeed some who have witnessed the operations described, express an opinion that the spade would be more effectual, and not more expensive than the plough.

Colonel

Colonel M'Dowall is in the habit of using the Trench plough on other parts of his premisses besides Mull of Logan, and the effect appears to justify his expectations.

An additional quantity of manure is required, and attention must be paid to the complete mixture of the soil, but where all these matters are properly attended to, the improvement produced must be great and lasting.

This tract of 185 acres was rented within the last thirty years at L.5 yearly, to two tenants who lived beside it, but they gave it up as a concern by which they were unable to profit.

At the death of the late Mr M'Dowall of Logan, his son found it stocked with an insignificant number of half-starved goats and sheep, and it was utterly incapable of keeping any other. The usual stock was about forty breeding ewes and twelve goats. In summer five small moor-bred cattle were generally put on, which remained about five months, but made but little progress. A servant of Mr M'Dowall's at one time applied for leave to graze a cow upon this moor, which he obtained; but was no gainer, for in a short time it was found necessary to remove the animal, as she had every appearance of starving.

From these circumstances an idea may be formed of the wretched sterility of this tract in its natural state, and of how little value it was to the owner.

When the improvements are complete, however, judges are of opinion that the whole may be let at twenty-two shillings per acre.

An

An accurate and circumstantial account of the expences of improvement would be desirable, but as the respectable proprietor has not yet chosen to exhibit a statement of this kind, it would be indelicate for any other to publish what might be called unauthentic. From the description given, however, practical men may calculate pretty nearly, according to the value of labour and manure in their own neighbourhood.

The first trench ploughing may be safely stated at, or near, fifty shillings per acre; for three men and six horses will, upon an average, require four days to accomplish a single acre. It is apprehended that the total expence, lining, inclosing and subdividing included, cannot be under L. 15 per acre; and great though this expence is, still the proprietor must ultimately gain, when it is considered that the upset price of land is now arrived at twenty-five years purchase of the rack-rent. Proprietors of waste and barren land, therefore, cannot more effectually promote their own interest than in imitating the laudable example of Colonel M'Dowall of Logan; if their situation admit the practicability of such undertakings.

In many situations such grounds might be planted to advantage, but the tract above described is by far too much exposed for that purpose. Indeed the exposure diminishes the value also in very respect, and renders the present improvements less encouraging than they would be under different circumstances. Were the local situation free from this heavy disadvantage, these lands might be as likely to become worth thirty shillings per acre, as they are to become worth what has already been mentioned, viz. twenty-two shillings.

CHAP.

CHAP. XIII.

IMPROVEMENTS.

SECT. I.—DRAINING.

From the dryness of the soil in Galloway, draining is less necessary than in many other parts of the kingdom. There are no very extensive marshes; few large portions of meadow-ground, and a very great proportion of the arable is of an absorbent subsoil. Hence operations of this sort, on a very large scale, are not to be expected. Still, however, draining would be of importance to the improvement of the country, to an extent of which, till very lately, the proprietors and farmers appear to have formed no adequate conception. In almost every farm there are pieces of wet land, of more or less extent, nearly useless, which, on being drained, would become very valuable. Bogs and mosses, which might be easily reclaimed, are condemned to sterility.

Arable

Arable lands, of the strongest and best soils, from subterraneous springs, or surface water, baffle all other means of improvement. In the moor country, tracts of wet land of greater extent, frequently occur; though here draining is still less practiced than in the low country. It is considered that, by this means, many thousands of acres in the county might be increased in value, four, five, or perhaps ten fold. It is certainly much to be regretted, that this species of improvement has not been more attended to.

The blame of this neglect ought to be ascribed more to proprietors than farmers. If draining is properly executed, no species of improvement is more permanent; but, in very many cases, the expences incurred would not be repaid in the course of an ordinary lease. Besides, the principles of draining are not yet well understood by the generality of farmers; and the profits of it cannot be realized, until it is followed up by other expensive improvements, which farmers will seldom undertake, without assistance from their landlords, or express stipulations in their leases.

The practice of draining, though still very limited in Galloway, becomes daily more prevalent. Many of the proprietors are now fully sensible of its importance, and either cause the operations to be done at their own expence, or grant a liberal allowance to their tenants for carrying them on; and enterprising tenants, without any allowance from their landlords, or stipulation in their leases, often do a great deal.

The drains are chiefly of two descriptions: 1. Open drains which serve also for fences and inclosures. These are

are commonly made three and a half feet deep, and six or seven feet wide. By means of these, patches of meadows, or arable land at the *bottom* of wet hills, are cleared of surface water, and consisting chiefly of alluvial soils, often become the most valuable lands in the farms. Whether they are clayey, gravelly, or consist chiefly of bog or peat earth, they ought to be ploughed; and their value is rarely known till they have been kept in tillage for a series of years.

Drains of the same kind are often necessary also on the sides of hills; and here much attention is requisite to draw them in a proper direction, and of depth sufficient to catch all the subterraneous springs. One or two of these are commonly sufficient, as main conductors for the water, brought from the different parts of the field by means of small covered drains. These form the second sort, and are often used in wet spongy hills with the best effects. They are made from two to two and a half feet deep, and filled with stones, nearly or altogether to the level of the ground. Sometimes it is thought necessary to lay the stones with great care, and to form small conduits in the bottom of the drains for conveying the water; but in general, this is little attended to, as from the irregular figure of the stones, sufficient openings are left, through which the water freely finds its course. The expence of cutting such drains varies from 4d. to 8d. per rood. Filling them with stones usually costs more; but as this can be often done much cheaper by the farmer himself, than by a contractor, it is a judicious and very fair stipulation in a lease, for the proprietor to be at the expence of cutting, and the farmer of filling up all covered drains. The clipping of hedges, or brambles might be employed, as a very good substitute

substitute for stones in covered drains, though in Galloway it is seldom necessary to have recourse to this expedient.

In some cases, however, the expence of filling drains with any of these materials is very considerable, and a much cheaper method has been adopted. The channel at the bottom of the drain is made very narrow, and well cleaned with a scoop mouthed spade. Shoulders, or what is termed a *scarcement*, is left at the distance of six or seven inches from the bottom of the drain. The narrow channel is then covered with turf previously cut from the surface; the turf being made to fit exactly, and placed with the grassy side downwards; or the covering turfs may be shaped in the form of a wedge, or key stone of an arch, and pressed down to a sufficient depth. An aperture is left, which serves as a water course; and the space above is filled with earth taken from the drain. The expence of filling drains in this manner is very trifling, and in the few trials which have been made, it is found to answer extremely well.

When a piece of land is uniformly wet, and requires to be totally intersected with drains, this is a very expensive improvement, and would in many cases exceed the original value of the land: but even in such cases, it is very mistaken oeconomy to neglect it, as, by means of this improvement, its original value would often be increased to a much greater amount.

In a sloping field, where the whole is wet from a retentive subsoil, and the declivity considerable, the drains ought to run parallel to each other across the declivity, with a descent merely sufficient to make the water

water flow gently, otherwise the earth would be carried away from the sides and bottom of the drain, and soon occasion obstructions, which are always troublesome to remove. It is of great consequence to ascertain from what distance the drain will draw off the water on both sides.

When the subsoil is hard till, this will seldom exceed three or four yards on the underside, and on the upperside, it will not perhaps reach as many feet. It requires, however, much practice in draining, to determine this with accuracy, and can often be only known from actual experiment. It sometimes happens that large portions of land are rendered wet by the bursting out of a few springs on being intercepted near their source. When this is the case, the evil may be remedied at small expence, if the drains are planned with judgment. The sources of the springs are best ascertained, and of course the drains would be planned to most advantage when the lands are in tillage, and partially dried after a tract of wet weather.

The practice of tapping, or boring with an augre, to procure a free outlet to the water, has been very little, if at all attempted in Galloway; and the subsoil, being seldom stratified, is not favourable to this mode of draining.

The drainers in this country have not paid sufficient attention to the proper formation of implements, and seldom use any other than the common spade, pick, or shovel; though for narrow covered drains, narrow mouthed spades, furnished with an iron wing for the foot, and also a narrow mouthed shovel to clean the bottom of the drain, would much facilitate their labour.

Draining

Draining ploughs are not used in Galloway, but in boggy soils drains are sometimes executed with the common plough at a very trifling expence. A good ploughman, with steady horses, can plough the depth of two furrows. The first furrow is laid off with the plough; the remainder must be taken out with the hand, and the drain afterwards cleaned and deepened with a spade or shovel. In soils adapted for the purpose, this diminishes the expence at least one half. The Reporter regrets that he cannot obtain information how much it might be abridged still farther by the use of a proper draining plough.

In the spongy hills above described, in strong clayey soils, a few farmers display much judgment in forming the ridges of a proper shape, and laying them off in such directions for carrying the water from the field, as in some measure answers the purpose of draining. The old injudicious practice of raising them very high in the middle, which some still follow, is attended with such inconveniences, and is so detrimental to the soil, that it cannot be too strongly condemned. A very slight degree of rotundity in the ridge is all that is necessary; but the furrows ought to be ploughed as deep as possible, and thoroughly cleaned with a double moulded or water-furrow plough.

SECT. II.—MANURING.

The effects of different manures in top-dressing, and the mode of applying them to *meadows* and *pastures* have already been briefly noticed: it remains, however, to consider fully their use and mode of application on *arable lands* under tillage.

Manures may be divided into two kinds—*stimulating* and *enriching*. Under the former are comprehended all such as merely bring into action the inherent fertility of the soil. Under the latter, such as furnish an additional quantity of food for vegetables; and thus render the soil permanently more fertile *. The stimulating manures employed in Galloway are lime, marle, and sea-shells. It has been already shewn, that the use of these, more or less, has extended to almost every part of Galloway. In the lower district the greatest part of the arable land has been dressed, and much of

* Chemical accuracy is not here pretended to. The food of plants is by no means clearly understood; nor have any theories respecting the virtues of lime, &c. yet been formed, which are calculated to explain all the phenomena. Still, however, the distinction is of much importance. From not attending to it, the greatest abuses have been, and still are, committed in the application of calcareous manures.

it repeatedly, with calcareous manures.* In the higher districts, however, much of the lands in tillage remain still unimproved, whilst much more, hitherto used only for pasturage, is well adapted for calcareous manures; and might thereby be rendered very productive under the plough.

Forty or fifty carts of marle are laid upon a Scotch acre, if the land has never before received calcareous manure; thirty or forty if it has been formerly manured. Sea shells are used nearly in the same proportion, and are esteemed preferable, if they are not mixed with a very large proportion of sand. A Carlisle bushel of lime (equal to three Winchester) is, in the opinion of farmers, equal to a cart load of marle. The marle, found in Galloway consists chiefly of decayed broken shells of a small shell-fish, which is often found alive in the springs and rivulets which feed the lochs and mosses where the marle is deposited. These shells are, however, often mixed with argillaceous matter.

In many places of the sea coast, there are large banks of shells; sometimes several feet above the present level of high water mark. Sometimes they are found almost entire, but commonly broken and decayed, and mixed in various proportions with sea sand. In many places of the shore small quantities are thrown in by every tide.

Lime is brought chiefly from Cumberland; and sometimes from Ayrshire and Nithsdale to the parts of Galloway which lie contiguous.

When

When sold at the different ports in Galloway, lime, in shells or an unslacked state, costs from 1s. and 4d. to 1s. and 6d. per Carlisle bushel: but as it is often conveyed to the distance of twenty or twenty-five miles into the interior, it costs sometimes 2s. and 6d. when laid upon the ground.

These different manures evidently operate nearly in the same manner; though an opinion is still prevalent, that where one of them ceases to be beneficial, another may be substituted with advantage. The only difference, however, arises from the quantity employed—the mode of application, or their specific gravity. At the rate in which they are used respectively by the generality of farmers, the shells and marle contain, perhaps, much more calcareous matter than the lime. Shells are often not completely dissolved for a series of years. Hence arise two advantages; little inconvenience is experienced from manuring to excess; and from mixing slowly with the soil their effects are more durable. From their specific gravity they blend more readily than marle, with peat or boggy soils; for the same reasons shells and lime are, in many cases, much better adapted for a top-dressing; though for this purpose marle commonly answers very well; and it is found by experience, that when its virtues have totally failed for raising crops, it may, notwithstanding, be very advantageously used for a top-dressing to pasture lands*. It ought also to be noticed that in some porous soils lime, when used as a top-dressing, sinks too rapidly, and has been found to penetrate through the soil, and rest in the form of a crust upon the sub-soil. Such lands should

* See Chap. viii.—Grass Land.

be brought again into tillage before the lime has penetrated beyond the reach of the plough.

The abuses committed under the old husbandry in the application of calcareous manures, are still but too common; 1st, cropping after them till the soil is completely exhausted; 2dly, repeating the use of stimulating manures, without the intervention of such as are enriching. And to aggravate the mischief, when one species of calcareous manures has ceased to operate, recourse is had to another. Thus, marle, shells, and lime, are successively employed; though the many failures which have attended such experiments might long since have taught the most ignorant to abandon a system at once replete with mischief and absurdity.

When lands have been exhausted by calcareous manures, it is extremely difficult to restore them to fertility. Repeated applications of dung, or rich compost is the best expedient. When dung cannot be obtained, they should remain in pasture, be stocked lightly, and always allowed to retain a good cover of grass. Even under the best management, twenty or thirty years will often elapse before they can be brought to yield as good crops as lands of the same quality, when limed or marled for the first time.

On the first application of calcareous manures to ley lands, they ought to be spread on the sward a year or two before it is broken up. On subsequent applications they should be always used as a top-dressing for fallows, or after green crops, and harrowed in, or ploughed down with a light furrow. Lime should always be scattered in powder. From inattention to this circumstance, much of it remains clotted, and never properly incorporates

incorporates with the soil. When lands have once been saturated with lime, the best way of using it again with advantage, is in compost, with strong soil, cleanings of ditches, &c. which ought to be well mixed before they are spread upon the land.

It is not too much to calculate, that the average value of out-field lands is doubled by the first application of a proper quantity of calcareous manure. Coarse heath-covered soils have their value often increased ten times. Rich croft lands are supposed, by many, to derive little advantage from such manures. This, however, appears to be a mistaken idea. In some instances, where it has been practised in Galloway, the improvement was very material; and where croft lands have been broken up, and are again to be converted to pastures, they ought always, however rich, to receive a top-dressing of lime.

After having fully proved both the good and bad effects resulting from calcareous manures, the farmers in general now begin to perceive the importance of turning their attention to such manures as are calculated to enrich impoverished exhausted soils. The advantage of sheds and straw yards is universally acknowledged; and various other expedients are employed to collect dung, which is found to be the only effectual restorative. The practice of foddering cattle in the fields is found to contribute almost nothing to the improvement of the soil. The virtues of the manure are exhaled by the atmosphere, or destroyed by the frosts; and by this practice also, the seeds of many noxious weeds are deposited; which remain dormant till the lands are broken up by tillage. Hence it is an object with all good farmers to

obtain accommodation of buildings for housing as many cattle as their stock of fodder will subsist. Some of them also house their cows in summer, at night, and during the heat of the day, and allow their young cattle to run into sheds at their pleasure; but this is by no means a general practice, (obvious and important as its advantages must appear) even with those who have sufficient accommodation. A few industrious farmers cover the bottoms of their sheds and straw yards with layers of peat earth, which being poached with the cattle, and enriched with their dung and urine, forms excellent manure. If this is mixed with straw, fern, or any other vegetables, its value is materially increased. Peat earth, prepared according to the directions given by Lord Meadowbank, has been repeatedly used by some individuals, and found to possess all the virtues he ascribes to it*.

* As this valuable compost is yet but little known in Galloway, though the peat earth, with which the district every where abounds, affords the greatest facility of preparing it, an abridged account of it may not be improper.

Having formed two heaps of moss at convenient intervals, with one of dung in the middle, let the workman begin at one end, and form a stratum of moss six inches thick; above this a stratum of ten inches thick; afterwards layers of moss and dung are spread alternately, of the thickness of a few inches; taking care that when the whole is finished, the proportion of moss to dung shall be three to one. The heap may be raised to the height of four feet; made flat on the top, and not compressed. The top layer, and whole circumference should be of moss, with ashes, or powdered lime strewed over it.

It is of advantage that the moss should be dug from the pits a few weeks before it is used. In summer, fermentation will take place in eight or ten days; and when it reaches blood heat, the whole ought to be turned over or watered. In ten weeks (more, or less, according to the state of the weather) it is fit for use.

Moss

Moss formed into compost, with garden mould, has been tried in a few instances, and proved also to be a very valuable manure. The mode of preparation is simple and obvious. A trench is dug in an old garden (where the soil is commonly very deep) of width sufficient to receive a cart. This is filled with alternate layers of moss, and of the garden soil contiguous, with a sprinkling of lime, dung, or green vegetables, as can be most conveniently procured. The soil thus dug up, leaves another trench to be filled in the same manner. In this way, the whole garden may be trenched over and formed into compost. A sufficient degree of fermentation ensues to decompound the peat earth, and convert the whole into a rich manure.

In the formation of dung-hills, a circumstance not unworthy of the attention of farmers, the most injudicious management very generally prevails. Sometimes they are situate on a declivity, allowing the juices to run off; sometimes on an eminence, by which means their juices evaporate; sometimes in hollows, where, being drenched with water, all the soluble and nutritious particles are extracted; often on sandy or loose gravelly bottoms where they are absorbed. Sometimes they appear in detached little hillocks where the air is too freely admitted, and sometimes in such compact and solid masses as to exclude the air and rains altogether. You may see them surrounded with docks, burdocks, thistles, nettles, hemlock, and noxious weeds of every description, which being allowed to grow to seed, cannot fail to pollute the dung-hill, and of course the lands to which it is applied. The evil of this has been much increased since it became the practice to collect the

poached earth around farm houses, and on the way sides, for the purpose of forming composts.

Under a better system of management, and with very little additional trouble, the quantity, or at least the value, of manures collected from the cattle might be increased to a very great amount. Though it may appear extraordinary, it is certainly true, that some farmers, with the same stock of cattle, and no better accommodation of buildings, raise twice as much manure as others; and of course, their crops are augmented in a similar proportion. There are, however, but a few farmers who collect dung in sufficient quantity to keep one-third of the land in tillage, in green crop, or fallows properly manured, which is essential in a well managed farm.

All good farmers are now convinced of the propriety of using the whole of their dung for fallows, green crops, or the formation of compost. But in many parts of the country, the old absurd practice still prevails, of spreading a part of it on ley, or stubble fields, by which much of its virtue is lost.

The quantity of dung requisite for manuring an acre is usually estimated at 40 cart loads of 20 cubic feet; varying according to the quality of the soil or species of crop intended.

Wreck, or *sea-ware*, is scattered plentifully along the shore, in some parts of the district. This is chiefly in Wigtonshire, where it is usual for the proprietors not to give to the tenants an exclusive right to the wreck on their own farms; but to allow any tenant belonging to the estate

estate, to cart off as much as he can. In Kirkcudbrightshire, where this common privilege, I believe, is not granted, the wreck often lies rotting on the shore, or is washed away by subsequent tides. It must be confessed, however, that the quantity thrown out on this part of the coast is comparatively small. It is esteemed a valuable manure when ploughed down in a moist state; otherwise it is of little benefit, and ought therefore to be used for compost, of which it forms a valuable ingredient. It is recommended as an excellent top-dressing for barley, when applied immediately after the grain is sown: of this, however, the Galloway farmers have had but little experience.

We cannot too strongly recommend the greatest possible dispatch in collecting and applying sea-ware as a manure; for, independent of the injury it receives from being dried by the sun, if a heavy fall of rain occurs, much of the soapy matter, to which probably it owes its chief virtue, will be washed out. If it cannot, therefore, be conveniently used as a top-dressing for lands in crop or fallow, it ought to be used as such on pasture lands, and will add not a little to their fertility.

SECT. III.—IRRIGATION.

This is a mode of improvement, for which Galloway, in many places, is evidently well adapted, both from the nature of its soils, and the copious streams and rivulets with

with which the country is almost every where supplied. These might often be employed at no great expence for destroying fog, (moss) heath, furze, broom, &c. for fertilizing meadows; and, where calcareous manures cannot easily be obtained, for improving arable lands. Irrigation was much practised by the old farmers, chiefly, however, on ley grounds, when intended to be brought into tillage, and very seldom either for the improvement of meadows or pastures. When such lands were intended to be broken up for grass, they were watered during the preceding summer and harvest, and part of the winter, without any intermission; being left dry only for a month or two before they were ploughed. Though in other respects their management was injudicious, the old farmers displayed great ingenuity in the method of flooding their grounds. This was done by plough furrows, in drawing of which they were very expert; keeping the proper level entirely by the eye, even where the surface was very irregular. Mud or ashes were sometimes thrown into the stream, when they could be easily procured; but by watering alone, they often succeeded in raising crops not inferior to those which were obtained by the use of dung. In consequence of both watering and cropping to excess, the lands were impoverished; and the practice being thus brought into discredit, has been discontinued for many years, and the idea still prevails that it cannot be resumed with advantage.

The immense benefit of irrigation to meadows and pasture lands, has, it is to be regretted, seldom attracted the attention of Galloway farmers, and of course the management of it is but imperfectly understood.

In

In a few instances where it has been practised on moor farms *, its efficacy fully appeared for destroying heath, and improving materially the quality of the pasture, even although the rivulets employed were very inconsiderable. Though the sheep stock eagerly sought the improved pasture, they did not suffer from it either by the rot or braxy; but it ought to be taken into the account, that they were originally very sound farms on which irrigation was practised.

The following mode of irrigation is perhaps not unworthy of notice. On a very unproductive meadow †, immediately after the hay crop was removed, a top-dressing was applied of common soil from an arable field: in a few weeks after, when the grass overtopped the earth, the meadow having a gentle declivity, was flooded for a considerable time, with a small stream, till the soil was pulverized and washed down to the roots of the grass. In consequence of this, the crops have since been increased four-fold, besides a great improvement in the quality of the hay.

In many parts of the country, meadow grounds are watered occasionally, from the end of autumn to the spring; but with very little attention to that judicious management which is necessary to give full effect to this mode of improvement.

The advantages of watering meadow grounds, both for hay and pasture, are now so fully ascertained from

* In one farm in particular, on the east side of Caunhanoe, in the parish of Anworth.

† In the possession of Mr M'William, surveyor.

long

long practice in many parts of England, and many parts of Scotland, that we cannot hesitate to recommend it in the strongest terms to the farmers in Galloway. Many of the meadow grounds, in their present condition, are extremely unproductive, and by far too little attention has been given to ameliorate them by any means whatever. To increase the quantity, and improve the quality of hay, is of very great importance, in a country where the winter food for cattle is so small in proportion to the means of keeping in summer. In consequence of this deficiency, the straw, which might serve for the purposes of manure, is almost entirely consumed by the cattle; and nevertheless, it is sometimes difficult to keep them from starving until the return of spring. Much might be done by a judicious improvement of meadow grounds, to remedy this evil. Yet the whole district, it is believed, does not afford a single instance of meadow grounds artificially prepared by *ridge-work*, *catch-work*, or any other elaborate process, for irrigation: and few, or perhaps none, where those natural advantages with which it abounds, have been turned to the best account; though in very many cases, under proper management, these are such as, with little trouble, might fully answer all the purposes of the most expensive operations.

Where meadows are to be watered, they ought always to be previously freed from springs, or stagnating surface water, by draining, where this is necessary. In the next place, the quality of the water ought to be attended to. This is best ascertained by experiment, but may often be known by observing the effects it produces on the sides of the streams and rivulets, which are occasionally overflowed; and also observing the quality of

of the soils which they have washed in their progress. Spring water is commonly good, if not impregnated with mineral substances, which are always unfavourable, and often fatal to vegetation. Water which runs through villages, or receives the scourings of ditches, farm yards, and the street washings of towns, affords a rich and valuable manure.

The quantity of water also is of importance; and where only a small quantity can be obtained, different portions of the meadow ought to be watered in succession at different periods.

The quality of the soil also deserves attention. All soils are benefited more or less by irrigation; loam more perhaps than any other; bog, or moss, not a little; clayey soils derive from it but little advantage, unless the water deposits much sediment, or the irrigation be followed up by tillage. About one foot of perpendicular in twenty of horizontal is the proper degree of declivity, to make the water flow over the meadow with a gentle current. One foot in a hundred is sufficient fall for the channel to convey the water along the upper extremity of the sloping meadow. Inequalities on the surface ought to be removed; and the water being conveyed by a principal feeder into the meadow, should afterwards be distributed as equally as possible to every part of it by catch furrows.

The meadow should receive the first watering as early as convenient in the month of October, to be continued for three or four weeks. It ought afterwards to be flooded, and left dry, alternately, till the beginning of March. The period of watering ought always

ways to be diminished, and of course the intervals of leaving it dry increased, as the season advances. When the grass exhibits any symptoms of putrescency, the water ought instantly to be taken off. If the soil is properly consolidated, the meadow may be pastured in March and April. About the end of April it should again be watered for a few days, and afterwards saved for a hay crop. Even from this cheap and simple process of irrigation, the reporter can attest, on his own experience, that very important advantages may be obtained. Though such astonishing returns from meadow grounds, in consequence of irrigation, as have been often mentioned in different counties of England, are not, perhaps, to be expected in any part of Galloway; yet, considering the natural facilities which it often presents for this species of improvement, it appears no less matter of astonishment than regret, that the farmers have hitherto so little practised it *.

SECT. IV.—PARING AND BURNING.

This was formerly much practised in some parts of Galloway for breaking up moors. It was generally done with the plough—the turf collected in heaps; and burnt or charred during the summer. In the following spring the lands were sown with oats, and crops of oats were repeated three or four times, till they were nearly ex-

* See a full account of irrigation in a very judicious essay in the Transactions of the Highland Society, vol. iii.

hausted.

hausted. The two first crops were commonly not inferior to what might have been expected from calcareous manures, and the quality of the grain even superior. But the lands being overcropped, and never laid out with dung, the soil was reduced to a mere caput mortuum, and remained long very unproductive. The bad effects of this injudicious management were so striking, that many landlords have prohibited the practice altogether; and tenants under no such restrictions have generally abandoned it.

No conclusion, however, can be formed against *paring* and *burning*, from the experience of its bad effects, when such was the subsequent management. There are many instances of lands having suffered no less from excessive cropping after marle; and some proprietors, from observing such bad effects, have in like manner prohibited the use of this manure, except for a top dressing on grass lands.

But it it appears highly probable from theory, and it has the test of experience in other districts, that *paring* and *burning* is a valuable improvement on moor lands, of a moderate depth of soil, and gravelly bottom; answering in some measure the purposes of lime, where this cannot be obtained. The quantity of soil consumed is really very inconsiderable; and the subsoil, from exposure to the atmosphere, and benefit of the ashes, becomes evidently fit for producing excellent grain, and the finest grasses, even on lands which before were remarkable for sterility. The proper management of such lands, however, is undoubtedly, after one crop of oats, to take a green crop sufficiently dunged, and then to sow out

out with barley or early oats, and suffer the lands to remain in grass for a sufficient length of time.

Paring and *burning* have been lately practised in a variety of instances both in Wigton and Kirkcudbright shires, though seldom to a great extent on *bogs* or *flow mosses*. Such mosses being commonly very unequal in surface, it is necessary to level them before they can be brought properly into cultivation. After paring, part of the turf is employed to fill up the hollows; the remainder, when fit for burning, is collected into heaps, or built into *kilns*, and set on fire. While they are burning, it is proper to add, from time to time, more turf, partially dried, to prevent the flame from bursting out; by which means the quantity of ashes is considerably increased. These ought to be scattered while in powder, that their virtues may be communicated equally to the soil. The moss being dug with a spade to the depth of a few inches, is, in the spring following, sown with bear, barley, or potatoe oats. It rarely happens, however, that the ashes alone afford sufficient manure, or that the moss is decompounded by this process to such a depth, as will ensure a good crop. It is therefore better to plant potatoes with dung in the first instance; and afterwards to carry on the cultivation in the manner which has been decribed chap. xi. § 11.

Paring of mosses is performed with the common spade rounded in the mouth, and sharpened from time to time. A flaying or paring spade, provincially termed a *flaughter*, is sometimes used, which performs the work more expeditiously. This is made of steel in the mouth, which is not much thicker than the blade of a common

common scythe—about eight or nine inches broad by three or four—the neck into which the shaft is fixed from two to four inches broad, bent a little upwards, and of sufficient strength to bear the pressure in raising the turf. It is provided with a shaft four feet long. Sometimes the shaft is six or seven feet long, when the bend of the neck is made less, as in working it runs more nearly parallel to the surface of the ground. It is also furnished with a small turned-up wing on one side of the mouth, which cuts the turf like the coulter of a plough. The parer is provided with greaves or plates of wood, by which he is enabled to give a stronger impulse to the spade.

But the lands in which paring and burning have been practiced with the greatest advantage, are such as consist of *peat* mixed with alluvial soil, or common earth. Bogs of this description are common in every part of the district, and some of them are of considerable extent. They vary much in depth; the soil is commonly retentive, and in its natural state very unproductive. When, however, it is broken and pulverized, it becomes extremely fertile, and bears cropping better than almost any other. From its extreme tenacity, to effect this by liming and fallowing, would be attended with great expence. Paring and burning is found to answer the purpose: and as the ashes are always copious, they afford sufficient manure for two or three successive crops. Where the subsoil is good, or the quantity of peat upon it considerable, the lands can never be injured by burning, as enough will remain for other manures to act upon, when the virtues of the peat ashes are exhausted.

The first instance that has come to our knowledge in which paring and burning has been practiced to a considerable extent on such lands, was on the estate of Sir Alexander Gordon, on a farm which he banked from the river Dee.

The bog being divided into fields of three or four acres by ditches, which served the purpose of inclosing, as well as draining, became so firm as to admit of being ploughed in dry weather. The furrows were then cut into proper lengths, and a short time after built into kilns, and set on fire. When reduced to ashes, these were immediately scattered, and ploughed down as soon as convenient: and the land thus treated produced luxuriant crops of oats, which were repeated several years apparently without any diminution.

The crops of oats and barley are stated to be superior to those upon the dry lands in the farm both in quantity and quality. The turnip and potatoe crops cultivated afterwards, were also luxuriant; and the hay on one field of four acres sown with clover and rye-grass, amounted to 1000 stones of 28 pounds avoirdupois.

The expences per acre for ploughing, paring, and burning and scattering the ashes, is reckoned at L. 1 1
Per acre of draining 2 0
A very moderate computation: but since that time the price of labour has been doubled.

Sir Alexander Gordon began this improvement from observing the method practiced in Berkshire.

Mr

Mr Cathchart of Genoch has this season practised burning on a pretty large field of a soil very similar to that which has been described, the bottom clay and sand, and the quantity of earth mixed with the peat very considerable. After ploughing, the furrows, when sufficiently dried, were burnt as they lay on the field without being built into kilns, or collected into heaps. He proposed sowing it with rape-seed; a species of crop which has been very little, if at all, attempted in Galloway.

One instance ought to be mentioned, in which paring and burning has been practised with very bad effect. This was done by the late Mr Craik of Arbigland. That excellent agriculturist made the experiment on part of a field, the soil of which consisted of a thin stratum of peat on a bottom of stiff tenacious clay; of course retentive of water both before and since the experiment. The experiment, however, from the accounts we have received, was most unfortunate. The peat soil being destroyed, the land, in spite of every exertion to improve it, has remained for a series of many years extremely unproductive: not worse, indeed, than in its original state, but greatly inferior to adjoiuing lands of the same sort which were improved, as this has since been, with dung and calcareous manures.

CHAP. XIV.

EMBANKMENTS.

In a preceding article it has been suggested, that large tracts of land might in some places of the district be rescued from the dominion of the sea. This appears most likely to be accomplished on the level sands of Kirkbean, and in Wigton bay, contiguous to the lands of Baldoon. No attempts, however, have yet been made to gain new tracts of land from the sea; though a good deal has been done by means of embankments, to improve the quality of land which had previously been subjected to the occasional overflowing of the tide; and the success attending these improvements has been such, in almost every case, as will justify recommending them to be carried on to a much greater extent.

The largest of these embankments is to be found in the neighbourhood of St Mary's isle; and along the river

river Dee, extending from Kirkcudbright nearly to Tongland. The former is more than a mile in length, and from eight feet to thirteen feet in height; the average, however, only about nine feet: and on the side exposed to the sea, rises with an acclivity of one in five; on the opposite side of one in two. The surf here is not very violent, otherwise the acclivity would have been more gentle. Valves are placed, which shut with the flowing tide, and open to carry off surface water if any should be collected. This embankment was executed seven years ago at three-pence per square yard, the expence of the whole being about L. 1,100; and although the principal object of it was to improve the lawn and pleasure grounds connected with St Mary's Isle, the value of the land protected by it has been so much increased as to compensate the expence.

The embankment betwixt Kirkcudbright and Tongland is two miles in length, seven feet high, with a greater acclivity than the former.

Similar embankments, and nearly on as large a scale, have been executed in the vicinity of Wigton, partly by tenants, and partly by proprietors. Tracts of marsh land have lately been embanked at the mouths of the Nith and of the Fleet, and in some other places of the district. Nothing can place in a stronger light the propriety of such improvements, and the extreme carelessness of landlords formerly to improve their estates, than that these last improvements, executed chiefly by tenants, have, in the course of a few years, indemnified them for the expences incurred, by the superior profits they have derived from the lands when brought into cultivation. As grass lands, their value indeed was not inconsidera-

ble before the embankment; but now being brought into tillage, they are superior, perhaps, to any in the county. They bear cropping for many years with very little manure; how far they might be improved by being flooded occasionally by the tide, has not yet been ascertained by experiment.

An attempt has been lately made by the Earl of Selkirk, to recover land from the sea by *warping*; this is done by driving piles of wood into the beach, interwoven with branches of trees, or any sort of bramble, to retain the mud on the ebbing of the tide. As the channel of the Dee where this species of embankment is formed, consists chiefly of tenacious clay, the quantity of mud deposited is not great, and of course the process must be slow, but in a series of years it is highly probable the intention will be effected.

The embankment of rivers, to prevent them from changing their course, has often been done with evident advantage, but has also often failed of success. In the execution of works of this kind, we know of nothing which particularly merits the attention of the public. Indeed an effectual method of embanking a rapid river, to prevent it from encroaching on the adjacent lands, is a desideratum still wanting. In a mountainous country, even inconsiderable rivers are often so swelled by the rains, that they descend in torrents, and not only overflow, but frequently carry away large tracts of valuable land, leaving in its place sands, which for many years remain barren. Almost all the *holm* lands in Galloway, show evident vestiges that the rivers have shifted their beds from one side of the holm to the other. They are perpetually forming meanders, beautiful and picturesque to the eye, but whose beauties are dearly purchased by the

the occupier, who sees his best fields cut up, and his rich crops swept frequently away by the inundation. Even when a new channel is formed in a straight line, which is sometimes done, the river seldom keeps its course for any length of time, but is perpetually encroaching on the one side or the other. From observing the effects of rocks, or large stones, on the current of a river, we are led to entertain the idea, that by means of these, or piles of wood fixed in the middle of the channel, such encroachments might often be better prevented than by embankments. A remarkable instance of this occurs in the holms of Carsfairn, where the Deugh runs with considerable rapidity, and as the soil of the adjacent lands consists either of a deep loam, or loose sand, is perpetually changing its course, though expensive embankments have often been made to prevent dilapidations. In one or two places, however, where there are large stones near the middle of the channel, it uniformly runs in the same course, and apparently without any other cause which can be assigned. The stream parted by the rock, on closing again below, is made to diverge from both sides of the river, and when taking an oblique direction, is by these means turned again into the straight line; and might thus, perhaps, merely by a continued succession of large stones, at proper intervals, be made to flow in the same course for any length of time, or to any distance whatever.

The following judicious combination of improvements, communicated by John Catheart, Esq. of Gennoch, deserves to be made public.

" The farm I here occupy extends to about 600 acres, one-third of the most valuable part of which was subject to inundation from the overflowing of a deep

stagnant brook, whose course meandered through an extent of carse land exceeding a mile. With the friendly acquiescence of the neighbouring proprietors, (who were little interested), I got the course straighted, and a cut made of sufficient width to contain the flood water. This operation was executed upon moderate terms: the course being 30 feet wide, by three and a half deep, with an embankment commencing five yards from the brink of the water, and ascending with a gentle acclivity to the height of four feet, formed a level breadth on the top of about ten feet: the whole was executed for 8s. 6d. per rood of 20 feet lineal measure. The top and front of the embankment have been planted in the method recommended by the Highland Society, with the Dutch green hoop willow, which has made wonderful progress, many of the shoots being eight and nine feet in length, of the first year's growth. I am satisfied, that in favourable situations, few plants would be more productive than willows.

"It was necessary afterwards to straight and level the old fashioned high crowned ridges of 32 feet broad. This was accomplished, first by scale ploughing, and afterwards beginning at the top of the ridge, and casting with the spade about five furrows on each side towards the lower extremities. This operation, which cost about 6s. per acre, greatly facilitated the subsequent one of fallowing.

"The expence of executing the above improvements, though great, bears no proportion to the permanent advantage arising from rendering such an extensive tract of land at all times fit for cultivation.

He

He further adds, " I have this season widened the water-course of my thrashing-machine to 14 feet; and as this extends fully a mile through the arable part of the farm, I expect that a flat-bottomed boat will greatly facilitate the conveyance of manure, and the produce of the soil; but as this has not yet been reduced to practice, I shall not indulge in the speculation."

CHAP.

CHAP. XV.

LIVE STOCK.

SECT. 1.—CATTLE.

The breeding and rearing of cattle has long been a favourite object with Galloway farmers. The soil and climate are peculiarly adapted for it: it engages much of their attention, and forms a principal source of their profits. Few countries can boast of pastures where the grass has such a beautiful closeness of pile, and where, after a scourging course of crops, they sooner return to their natural verdure and fertility. The lands in Galloway, from the dry kindly nature of the soil, after being apparently exhausted, will, in five or six years, and often even without the help of artificial grasses, vie with the fine old pastures of other districts:—being covered with a rich mat of white clover, the poas and other grasses of the choicest qualities. But it is chiefly lands which have

have not been so scourged, and are laid out in a proper manner, or such as have remained very long in pasture, and particularly the old crofts which are never broken up that yield pastures, not only of luxuriant growth and beautiful verdure, but of the finest and most nourishing qualities in which cattle so much delight, and thrive and fatten with extraordinary rapidity.

It is a peculiar excellence of the Galloway pasture, that in autumn and even in winter, when on the eastern coasts the fields are grey and withered, they still retain their beauty and their verdure. Add to this the convenience of excellent shelter, and it will appear, that Galloway is adapted by nature for a grazing country, and that the Galloway farmers have acted with judgment in turning their attention to the breeding and rearing of *cattle*. No farm almost in it, is exclusively applied to any other purposes. Agriculture, in most cases, is only a subordinate consideration: breeding of sheep is not carried nearly to the same extent with that of cattle; and neither the *dairy* system, nor feeding off for the butcher form material objects in their systems of œconomy.

The breed of Galloway cattle is peculiar to the district; and well deserves a particular and minute description.—They are almost universally polled, and perhaps rather under the medium size, being less than the horned breed of Lancashire, or the midland counties; but they are considerably larger than the North, or even the West highlanders. Their size is not very different from the Devonshire, though rather under it. But it should be noticed that the size differs materially, not only from a difference of pasture, but may, without any variation in their other characteristic qualities, be considerably either increased or diminished at the option of the farmer.

mer. And good farmers always chuse to have their breeders rather *under*, as they absurdly term it, than *above* their pastures. The prevailing colour is black or dark brindled, though they are occasionally found of every colour. This may also, with a little attention, be regulated according to the fashion of the times, or taste of the breeder. But the dark colours are uniformly preferred, from a belief that they are connected with superior hardiness of constitution.

The following are the characters of a true Galloway bullock. He is straight and broad in the back, and nearly level from the head to the rump, closely compacted between the shoulder and ribs, and also betwixt the ribs and the loins—broad at the loins, not however with hooked bones, or projecting knobs; so that when viewed above, the whole body appears beautifully rounded, like the longitudinal section of a roller. He is long in the quarters, but not broad in the twist. He is deep in the chest, short in the leg, and moderately fine in the bone—clean in the chop and in the neck. His head is of a moderate size, with large rough ears, and full, but not prominent eyes, or heavy eye-brows, so that he has a calm, though determined look. His well-proportioned form is clothed with a loose and mellow skin, adorned with long soft glossy hair.

Beauty and proportion in animals, the Reporter is aware, are only to be judged of by comparison; so that when cattle are described in general terms, the same epithets may be applied to any species. To say, therefore, that Galloway cattle possess breadth of back, roundness and fullness of carcase, depth of chest, length of quarter, with other qualities which are so much the objects

jects of attention of all who make it their study to improve the breed of cattle would be vague, and could afford no accurate information; since every improved breed must, to a certain degree, be possessed of these qualities. The true criterion by which to ascertain their relative degree of excellence, is to compare the most perfect individuals of any one breed with the most perfect of any other. This affords a just test by which to judge of the whole breed; because whatever valuable qualities the most approved individuals possess, by attention and proper management, may, in time, be communicated to all the rest of that breed.

In making a comparison of this kind between the Galloway and other approved breeds, it must be premised, that the circumstances under which it is made are severely trying; as the Galloway breed has never been made the object of that judicious, accurate, and persevering attention, which has long been bestowed on the most celebrated breeds in England.

The Galloway farmers, it is admitted, are an intelligent set of men, and perhaps, in general, understand the management of cattle as well, or better, than any others in the kingdom. They all know to distinguish a good bull or a good cow from a bad one; and fail not to select from their own stock such as are best adapted for the improvement of the breed: and from this general attention, it no doubt arises, that the cattle in Galloway are pretty uniformly good; and that no instances are found of such wretchedly bad stock as, in England, may be often seen in the very fields adjoining to those which pasture the best. But among them have arisen no enthusiasts in the profession—none who have studied

it scientifically, or dedicated their talents almost exclusively to this one object. No fair test has yet been given of what might be done by a proper selection of the choicest individuals of both sexes for breeders, and uniting them in such a manner as seemed best calculated to diminish their faults and heighten their properties—by crossing the progeny of these from time to time; and still carefully pursuing proper combinations of the most approved males with the finest females, till the improvement was carried to the greatest perfection of which the breed is susceptible. No Bakewells, no Culleys, no Collings have yet appeared in Galloway; who with a skill, the result of long study and experience, have united sufficient capital, and by the success of their experiments have made great fortunes, and transmitted their names to the most distant parts of the kingdom.

Little, comparatively, has been done in Galloway for improving the breed of cattle; and the very attention bestowed upon it has, in many circumstances, as shall afterwards be shewn, tended not a little to deteriorate it.

We are, therefore, comparing a breed nearly in its natural unimproved state, with those on which much pains have been bestowed; yet, under all these disadvantages, the Galloway will not shrink from a comparison with any other breed whatever.

In roundness of barrel, and fullness of ribs, the Galloway cattle may, perhaps, claim the superiority to any. Their breadth, over the hook bones, is not to be compared to that of some, both of the long and short horned;

horned; but, it is to be remarked, that their loins bear a greater proportion in width to the hook-bones: and this, unquestionably, is the only point truly valuable, projecting nobs of bone being in reality a blemish. In length of quarter they are not deficient, though perhaps some of the Dishley are superior. In this respect they differ considerably; there being, in fact, two distinct sorts. In the moors, length of body is not much in request, from the idea that such cattle are less hardy; but in the low country it is always valued, and is prevalent to a degree which some would be apt to reckon an imperfection. On accurate examination it will not, however, be thought so; for this superiority of length is entirely in the side along the ribs, a very useful part of the animal. In the space between the hooks and ribs, the Galloways are shorter than either the long or short horned. This is in itself a most valuable point; and it is, doubtless, because length of body is generally occasioned by the length of this space, that the reverse has been considered as an advantage. When it is otherwise, and the length consists in the space occupied by the ribs, it is certainly a good quality, for the same reason that length of quarter is universally allowed to be so.

A good neck and head are held in great estimation in Galloway: yet there is, perhaps, no point in which the general run of Galloways are so deficient. But, although the Galloway cattle have not the fine slender taper necks which belong to some other breeds, yet it is not to be inferred, that the neck is coarse or disproportioned to the other parts of the animal. A very slender neck or fine head would be no recommendation to a Galloway: and certainly would not correspond with the

the broad shoulders, deep chest, and close compacted form of body for which they are remarkable. Taking all these into the account, the ordinary stock of cattle is not very faulty; and individuals may be found which, even in this respect, would vie with the most boasted of the long or short horned. This, however, can only be said of the cows. It would be difficult, if at all possible, to find a Galloway bull equally fine in this, and perhaps some other subordinate points of beauty, with some of the most approved of other breeds. It is a remarkable circumstance, that the Devonshire cattle are, in this respect, similar to the Galloways, as it is said to be equally difficult among them to find a bull which has a degree of fineness of head and neck proportioned to that of the cows. This coincidence in two breeds so indisputably eminent in the essentially valuable properties of cattle, opens a curious field of speculation to those who are disposed to form their opinions in a scientific manner on observation rather than authority.

In fineness of bone they may challenge a comparison with either the long or short horns—a singular circumstance, when it is considered for how long a period thick bones were held in estimation; and a remarkable proof of the intrinsic merit of the breed, since even the most injudicious management, for a great length of time, has not in this respect been able to spoil it. It is but justice, however, to the Galloway farmers to state, that the prejudice in favour of thick bones originated not with them, but was derived from Norfolk. Few cattle are reared in Galloway for home consumption, or fattened for the butcher. It was, therefore, the business of the Galloway farmers merely to suit the taste of the drovers, or rather of the Norfolk graziers, by whom their

their cattle are purchased; and, till a very recent period, this was uniformly in favour of thick bones, conceiving that small bones could never carry a weighty carcase. Of course, the farmers were led, perhaps in opposition to their own better judgment, to consider it as a very essential improvement to enlarge the size of the bone. It is now fully ascertained, not by the experiments of a few individuals, which, however accurately conducted, would not, perhaps, be decisive on the general question, or at least not sufficient to determine the public mind, but by the united testimony of all good farmers, that fineness of bone is a real and most valuable property. The doctrine long scouted at by the Galloway farmer, as well as the Norfolk grazier, is now very generally received; and the dispute, it is presumed, fairly put to rest. If any are still so obstinately attached to antient prejudices, as to dissent from it, let it be remarked that thick bones are not the indication of large growth (the only argument that can be adduced in their favour), but of a clumsy awkward form; and are usually connected with coarseness of head and neck, and other bad qualities which all have agreed to condemn. Though prejudiced in favour of large bones, they never carried their partiality so far as to sacrifice to them beauty of form. The moorland farmers, convinced that large boned cattle would not thrive on their barren hills, never aimed at increasing the size of bone above what their pastures would feed; and by this judicious management have preserved the breed of Galloways in its greatest purity. Such cattle, when introduced into the low countries, thrive remarkably; and whilst they increase greatly in size, still preserve their original fineness of bone, with all their other most valuable properties. Independent of experience, it will not admit of a

 doubt,

doubt, that the same quality which enables an animal to subsist on very bad pasture, will make it thrive remarkably on good—and therefore if the large boned animal is unable to subsist on bad pasture where a small boned one will thrive, it cannot be expected that when both are put on good pasture, the former will thrive and fatten so well as the latter.

The shortness of leg, for which the Galloways are remarkable, appears to detract from their fineness of bone; but this of itself is a valuable quality. With the same cleanness and fineness of shank, perhaps no breed is so large and plump above the knee, which, with their broad capacious chests, allowing the lungs full room to play, must not only add to their weight, but contribute to their strength and activity. To this circumstance, perhaps, it may be ascribed, that in enduring fatigue they are unequalled, and from the longest journies suffer so little injury.

In straightness of back, the Galloways are excellent; and in general beauty of form, leave the short horns far behind, and may very fairly vie with the long horns. There is another circumstance, however, of still more importance, and in which the comparison is still more in their favour, viz. in their skin. This, in the opinion of the most accurate judges, is the most important of all points, and the most decisive proof of their thriving or unthriving nature. A thin mellow skin is universally the indication of a thriving bullock, and of a good quality of meat: as a thick hard hide is, on the other hand, invariably accompanied by coarse-grained meat, and shews an unthriving and slow feeder.

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The skin of the Galloways, in general, is of a moderate thickness, but universally mellow, and kindly to the touch. Even on the moorland farms, where the cattle, during the greater part of the year, are fed in a scanty manner, it is astonishing how little their hides indicate the poverty of their fare; how far they are from adhering to their bones, as is the case of less hardy cattle, whenever their food is in any degree stinted. Though the skin, in general, is not uncommonly thin; yet, taking the thickness and mellowness together, very ordinary cattle in Galloway, will equal the most boasted first rate individuals of the short horns, and leave the long horns no room for comparison. Particular selected in-individuals among the Galloway cattle, are also very thin in the skin, and of a mellow softness to which these breeds can not produce the shadow of a comparison. The Devonshire cattle is perhaps the only English breed which, in this respect, can vie with the Galloways.

All the qualities which have been enumerated, may, however, be regarded only as secondary and subordinate. Beauty, symmetry, and proportion, fineness of bone, thinness or mellowness of skin, softness and glossiness of hair, are valuable only as they indicate a tendency to *grow*, *thrive* and *fatten;* to be reared at the least expence, and afford meat of the most excellent quality. In all these essential properties, none will deny that the Galloways possess a very high degree of merit; are equalled by few, and excelled perhaps by none. Their condition is often astonishing, when compared with their pastures. Their weight is no less so when compared with the apparent bulk of the animal. They fatten readily at a very early, and at a very advanced age. Many of them are sent from their own pastures,

directly to the Smithfield market, a distance of 400 miles, and eagerly bought up by the butcher, though only betwixt three and four years old. They are often fit for the butcher at two or two and a half: and an old cow, lean in the spring, will at the Martinmas following, merely with grass feeding, sometimes yield six, seven, or eight stones of tallow. The milk cows have a remarkable tendency to get fat: hence they are reckoned but indifferent milchers. But what above all may be regarded as decisive of the merits of the Galloway breed, is the uniform testimony of the Norfolk graziers, who have long given them the preference to every other breed of cattle. Their average price is 2l. per head, above that of any other breed of the same weight. In the London market, where all the breeds of the island come in competition, they are generally allowed a decided preference. It need not be added, that the meat is in great request, being of the very best quality; of a delicate grain, firm fat, juicy, and finely marbled.

In one respect, the inferiority of the Galloways is acknowledged. They cannot be raised to that enormous bulk and weight to which some others have attained; but this inferiority is much more than compensated by the less quantity of food which they consume.

Upon the whole, therefore, in making the comparison betwixt the Galloway and other most approved breeds of cattle in the kingdom, when every thing truly valuable is taken into the account, and fairly appreciated, we presume it will appear that the Galloways, though not excelling in every particular, yet do not come far short in any; that in qualities the most desirable they yield to none; and finally, that with the greatest number of valuable

valuable properties, they have fewer, perhaps, or less objectionable faults than any other species. Single individuals of other sorts, from extraordinary attention bestowed upon them, may perhaps be found more excellent; but from a few isolated facts, the result of such superior management, no unbiassed judge would decide on the general question.

In forming an opinion, the Reporter does not rely on his own skill or observation, but on the united testimony of those whose skill he knows to be undoubted, and means of observation very extensive, and on whose candour and veracity he can fully rely. After all, to assert that they are absolutely the best breed in the kingdom, until further inquiry has been made, would certainly betray prejudice instead of a candid love of truth. The Devonshire breed in England, and the largest breed of kyloes, or west highlanders, from the best information the Reporter can obtain, may contend with them, and indeed very much resemble them, in the most important particulars; with this exception, however, that the Galloway breed will arrive at perfection earlier, and feed fat in a much shorter period. When the merits of cattle come to be appreciated on just grounds, and the influence of quackish arts is at an end, many breeds, which are now the most fashionable, will cease to attract attention; and these will, in all probability, be the only ones with which the Galloways shall have to contend for pre-eminence. How far in that contest they will prevail, or where the victory will remain, as yet, perhaps, there are not sufficient grounds to determine. The inquiry is certainly of very great moment; and if what has been said upon the subject shall ultimately lead to a just determination, the attention bestowed on this ar-

ticle, will not, it is presumed, be considered as unimportant.

The table annexed will exhibit at one view, and illustrate perhaps better than any description, or even drawing, the relative proportions between two Galloway cows, and two acknowledged to be the very best of the long and short horned breeds, in all those points which are considered to be of the greatest importance. It has been made with the greatest possible accuracy, and is so plain as to require no illustration.

The breed of Galloways, it is to be regretted, has not been preserved pure in every part of the country. It has been materially injured by intermixture with the Irish and Ayrshire. One or two of these cows are purchased occasionally by farmers from the idea of being better milchers, and their progeny being kept, mix with the general stock of the country. Independent of the circumstance already mentioned, of attempting to improve the breed by increasing the size of the bone; attempts have also been made to improve it, by introducing foreign mixtures. For this purpose, bulls were introduced from different parts of England, of the most approved kinds. The progeny of some of these has long been in the country, and though crossed with the natives for 50 or 60 years, is still easily recognized, but deservedly held in little estimation. The late Earl of Galloway practised such experiments, as was *believed*, with success; but now that the proper management of cattle is better understood, such crossing is completely abandoned: and among all the best judges, it is agreed that the true improvement of the Galloway stock is only to be obtained by crossing with the most approved individuals, judiciously selected from different parts of the

(Opposite to p. 246.)

Two of the *Galloway* [illegible]*rt-Horned* Black Cattle.

	Difference. G[illegible] H[illegible]		Inches nearly.
	[illegible]r of [illegible]way.	In favor of Long Horns.	
	Inches.	Inches.	
Width of Hooks	[illegible]		$2\frac{1}{2}$
——— Loin.....			$1\frac{1}{4}$
Length of Quarter.....			2
——— Back		26	5
——— Space.....	[illegible]		$\frac{3}{4}$
Girth at the Rib			8
——— Chine			$6\frac{1}{2}$
——— Neck			$\frac{1}{6}$
——— Shank ...	[illegible]		$\frac{1}{4}$
	[illegible]	In favor of Short Horns.	
Width of Hooks		$3\frac{5}{8}$	$\frac{1}{2}$
——— Loin.....		$\frac{7}{8}$	$\frac{1}{8}$
Length of Quarter.....	[illegible]		$1\frac{1}{2}$
——— Back.....	[illegible]		$5\frac{1}{2}$
——— Space.....	[illegible]		5
Girth at Chine.....	[illegible]		$2\frac{1}{4}$
——— Neck.....	$\frac{3}{4}$		$1\frac{1}{4}$
——— Shank.....		$\frac{3}{4}$	$\frac{1}{8}$
Width of Hooks.....		$11\frac{3}{4}$	$1\frac{3}{4}$
——— Loin.....		$2\frac{3}{4}$	$\frac{1}{3}$
Girth at the Chine.....		7	1
——— Neck.....		$2\frac{1}{2}$	$\frac{5}{16}$
——— Shank....	[illegible]		$\frac{5}{16}$
Length of the Back.....	[illegible]		$2\frac{1}{2}$
——— Quarter..			$\frac{5}{8}$
——— Space.....	$\frac{3}{4}$		3

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the country. By pursuing this method, it is not to be doubted, that the breed of Galloways may still be very much ameliorated. Excellent as they are, much yet remains to be done to bring them to that perfection of which they are capable: And it is to be hoped, that not merely a few patriotic individuals, but the farmers in general, surpassed perhaps by none in their knowledge in cattle, will exert themselves in a point where their own interest is so immediately concerned. We do not indeed expect that they will all become Bakewells or Culleys—that they will give hundreds of pounds for bulls, or the use of bulls, or that they will travel through the kingdom to become adepts in the art. It is not necessary that they should do so. Without going beyond the limits of their own district, and with no other information than what they may obtain perhaps from their nearest neighbours; they may, at the very moderate sums of 15l. or 20l. obtain bulls and cows of an excellent sort, and by making always a judicious selection, and attending with equal care to the other parts of their œconomy, the breed already excellent, would soon arrive at still greater perfection*.

* A very injudicious practice generally prevails in the choice of breeders,—attaching too much importance to size, either in the male or female. Nothing will more certainly spoil the shapes, unless the pastures are of the very best quality. The Reporter has seen, in a variety of instances, the finest Galloways produced from small cows brought from the moors to the low country, though (contrary to the principles of Mr Cline,) the bull was large. Perhaps it might answer still better to cross with a moorland bull, and handsome cows of the low country. In either case, there is not a doubt that the progeny would soon increase in size according to the quality of their pastures. In the cases mentioned, though the bone was small,

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The average prices of cattle on good farms in the low country are, when one year old 4l. 10s.—two years old 8l.—three years old 12l. 12s.—and at three and a half 14l. 14s.*; at this age they are commonly sold to the drovers, and carried to the English markets. The best are often sold a year sooner, and the inferior are often kept a year longer in the country. A Galloway bullock at 14l. 14s. would weigh 36 stone, of 16lb. fed another year on the best pastures he would weigh 50 stone: 60 stone would be counted a very large one. They have frequently, however, been brought to 80†; and there have been instances of aged cattle weighing 100†.

Spaved queys are of a smaller size than bullocks, but fatten sooner. Their average value is 10 per cent less. Their period of greatest improvement is from two and a half to three and a half. Hence it is now the practice with the judicious farmer, to sell his cattle at this age. This, however, is to be understood only of such as have been reared on good pastures. Those which have been brought from coarse pastures, improve perhaps still better at a more advanced age. Hence, in buying cattle (ceteris paribus) little regard is paid to the age of the animal. Size, shape, and condition being the same, he will give nearly the same price, whether one, two, three, or four years old.

the breed was rather above the middle size, and much superior in value to the average breed of the country.

* These are to be understood as the average prices for two or three years preceding 1809. The price of cattle has risen since that period from 20 to 25 per cent.

† † This is to be understood when fattened in England.

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The expence of keeping usually corresponds with the progressive rise of value and improvement. With this exception, however, that, as during winter in Galloway, cattle are chiefly fed with straw, or coarse hay, aided by the small remains of vegetation, which goes on in the fields: their improvement from October to April consists solely in an increase of growth. In summer, therefore, the improvement may be reckoned double of what it is in winter: the expence of keeping would only be rated about one-third higher.

Few of the Galloway cattle (comparatively) are fed for home consumption. The principal supply of the country, and of the small towns and villages is derived from the fat cows, sheep, hogs, &c.

With the deduction of about one-fortieth which are reserved for the tables of the opulent, all the prime cattle are appropriated for the English markets, whither by far the greatest number are sent at three, or three and a half years old. Many of them are driven at once to Smithfield, but the principal sales are at St Faith's, and other markets in Norfolk. There they are commonly fed for a few months on turnip, and sent to Smithfield during the winter.

The whole number of cattle sold annually from Galloway, according to very accurate information, may be stated at 20,000. The proportion of bullocks is about two-thirds; the remainder are heifers, including a few cows. The principal markets to which they are sent are Bungby, 14th of May; Hallisworth, 9th of June; Harleston, 5th of July; Woolpit, 18th of September; St Faith's, 17th of October; and Hampton, 16th of November;

November. Next to St Faith's, Bungby and Hampton, are the most considerable.

The average prices of the cattle sent to these markets, for two or three years preceding 1809, may be stated at 13l.

Many of the inferior cattle are sold in Dumfries, or sent to the north of England, probably to the amount of 3000, at the average price of 8l. or 8l. 10s. The whole of the cattle above mentioned are not of Galloway breed; two or three thousand being imported annually either from the neighbouring counties, or from Ireland and the Highlands.

Exclusive of the above sales, it will appear from what has been stated in a preceding article, that a vast number of transfers are made among the farmers, almost at every period of the year; and chiefly, or at least when judiciously conducted, from inferior to better lands. To facilitate these transfers, the following weekly or monthly trysts are held: Kelton, Gatehouse, Wigton, Glenluce, Stranraer, and Whithorn. Prime cattle, however, are seldom brought to any of these markets.

The very great, and sometimes sudden and unaccountable fluctuation in the prices of cattle, is often a cause of serious embarassment to the Galloway farmer. From this circumstance, it is nothing extraordinary for him to lose the whole expences of keeping on his best pastures for a whole year. This, it is true, would not be seriously felt by those who do not buy till they have first sold; as the quantity disposed of might be again replaced, at a similar deduction of price. With the breeder

breeder too its effects would be only momentary. Since the diminished profits of one year would be proportionally augmented in subsequent years. But few of the Galloway farmers are contented to follow such prudent and cautious plans of management. To a greater or less extent the majority of them are cattle dealers, or involved in money transactions with such as are, and who, perhaps have nothing but an ideal capital, which vanishes with the first stagnation in the trade. Hence failures occur in *this*, perhaps, more frequently, than in any other branch of commerce; and their consequences are often very extensively felt.

For almost a century past, there has not, perhaps, been more than one out of ten, among the drovers or cattle dealers, who have not, in the course of their dealings, become once, or oftener insolvent. Their failures have often been to a very great amount, and the composition with their creditors very inconsiderable. The recurrence of such failures has happened so frequently, and the consequences of them have been felt so extensively, that many of the enlightened part of the community have seriously advised a change of the system altogether. The plans suggested have been, either for the farmers to depute certain of their own number to go with the cattle to the English markets, and sell them for what they would bring; or for the English graziers to buy them in the country, or contract for them by commission, always paying in ready money, and thus supersede the use of drovers altogether.

It does not appear, however, that there is any real necessity for such violent innovations. Commerce in cattle, as in every other article, if left free and unrestricted,

tricted, will naturally fall into its proper channel. None can be so well qualified to carry it on, either at so small expence, or in a manner so advantageous to the two parties concerned, the graziers in England, and the farmers in Scotland, as men regularly bred to the profession, if they have talents and capital. Whether those who embark in the trade have talents sufficient to carry it on, it is, perhaps, not difficult, after a few transactions, to ascertain. But the extent of their capital, on the present plan of management, if known at all, can be known only to those whose interest it is to keep it concealed. They have two sources of credit; one with the country, and another with their bankers. The banker, through whose hands their remittances are usually conveyed, may know with tolerable accuracy how far they are entitled to credit; but, having the additional security of the farmers for the sums he advances, though often involved to a great extent, he runs little risk; and seldom withdraws his support, till affairs become desperate. By means of this two-fold source of credit, a person who could not muster 500l. of real property, or who, perhaps is not worth a single shilling, by ordinary good management, and a considerable share of address, may carry on for years, the business of a cattle dealer to the extent of ten, twenty, or thirty thousand pounds. Failures to this extent have frequently occurred.

The credit of the drover ought to rest solely with his banker. By this very simple alteration, the failures of drovers, with all the evils that follow would be completely obviated; none would be precluded from engaging in the business but such as are unqualified for it. It holds forth so many temptations, that a sufficient number of competitors still would appear; and the farmer, with no risk at all, would continue to receive the same fair prices

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as before, for his cattle, and better prices than he could expect by any other system of management.

It has been said, that the money lost by the failures of drovers is not lost to the country. True—but it is lost to the farmer; or unjustly taken from the pocket of one farmer, and put into that of another. The exorbitant prices given by the drover to support his tottering credit, will not perhaps in any single instance compensate the loss occasioned by his failure; and were the amount of the whole loss to be fairly equalized, among all those with whom he ever had transactions, in proportion to the extent of their dealings, it would be very far from balancing the profit and loss account. For it is not, in fact, from the exorbitant prices given, but from the exorbitant *expences* incurred, that in nine cases out of ten, the drovers become insolvent; and *these* never go into the pockets of farmers, but of bankers, lawyers, messengers, with the deduction of no inconsiderable part consumed among innkeepers for their solace under their misfortunes, or the entertainment of those who have been the supporters of their credit. In making these observations, it is but fair, however, to state, that among the drovers there have been many who would have done credit to any commercial profession. Men of talents and great activity, and who in a line of business which exposes them to many temptations, have united much firmness with strict probity of character*. Of those who have failed, a few perhaps merit pity for their misfortunes rather than censure for any errors in their conduct; who, reduced by inevitable misfortunes,

* Mess. Smiths, Corsons, M'Lellans and Hopes, deserve to be particularly mentioned.

have

have long struggled hard, that they might do justice to their creditors, and who after their failure, have not ceased to enjoy the esteem of all their acquaintance, and the sympathy even of those who had severely suffered from their insolvency.

The expediency of frequent transfers of cattle, and still more the strong propensity which farmers have for this kind of traffic, merely from the idea of making profitable bargains, has given rise to another species of cattle dealers, termed jobbers. A few of these are really useful in the country: but as this business opens prospects to wealth more alluring than any thing which presents itself in the common road of industry, by far too many are induced to speculate in it, and the extent of their transactions almost exceeds credibility. No just idea of this can be formed from the number of cattle brought to market, or sold in the country. They are often repeatedly transferred in the same market; and it is a circumstance not at all unusual, for the same lot of cattle to pass through five or six different hands before they reach the grazier who feeds them for the English market. These transactions are commonly settled by bills, payable at three months, which being discounted by the bankers, create a fresh capital upon each transaction for new speculations. With the address which such men often acquire, and the extensive connections they form in the country, it will not appear surprising that, even with very little stock, they should be enabled to carry on such traffic to a large amount: and if it is considered that sobriety, œconomy, or strict moral honesty, are not commonly the prominent features of their character, it will seem as little remarkable that failures should frequently happen. When insol-

vency has become unavoidable, the methods they employ to protract, and if possible to extend their dealings, greatly aggravate the mischief, such as discounting bills in one bank, to retire those which have been protested in another, and when they have no longer credit with the bankers, applying to other money brokers, who with the additional security of a few indorsers on the bill, advance them money, on common interest, or perhaps also a small premium *. These are frequently men of the law, who well know how to recover desperate debts; and sometimes to enrich themselves with the spoils of the bankrupt; whilst the farmers, or other creditors must be contented with a very trifling composition.—It is devoutly to be wished, that all such money changers were expelled from the temple of agriculture.—The bankers alone are sufficient for all the purposes of exchange, and have never been unwilling to accommodate such as are entitled to credit.

On almost every farm in Galloway, breeding cows are kept, but more of them in the moors than in the low country; and in the Shire than in the Stewartry. On very good pastures it is thought more profitable to buy cattle at an advanced age, than to keep a full breeding stock. As the rearing of young cattle, much more than the dairy, is the object of keeping cows; so these are seldom selected for the quality of being good milchers, or managed in the way which is best adapted for producing the largest quantity of milk. At an average on good pastures, they give four Scots pints a day for five months, besides feeding the calves; and for four months more, about one half of that quantity; and during three months, they are commonly dry.

* Commonly two and a half per cent.

Although

Although the quantity of milk given by Galloways is not great, it is remarkable for the quantity and excellent quality of the butter which it yields*. Combining this circumstance with the comparatively small quan-

* A Galloway Gentleman, some years ago, when on a tour through an Eastern county, was surprised to observe a small Galloway cow among some very large ones of the Teeswater breed. On expressing his surprise to the farmer, he gave him the following anecdote:—Having accidentally met with six small Galloway cows in the hands of a cattle dealer, he purchased them for the purpose of feeding them fat. One of them, however, dropped a calf, which he ordered to be fed by the hand with the milk of his other cows: conceiving, from the appearance of the mother that she would not have milk enough to keep it alive, and that she would immediately become dry. Some considerable time after this, his attention was attracted by one of his children petitioning its mother for what it called *cowie's cream*. On enquiring into the child's meaning, he was informed that *cowie's cream* was a term his young people had applied to the milk of the little Galloway, which had increased in quantity, and had been discovered to be of a singularly rich quality. Cowie's life was therefore spared. When he told the anecdote, she had been several years on his farm, and cowie's cream continued to maintain its character in the family.

The same Gentleman introduced a large cow of the Teeswater breed among a stock of Galloways, on his farm in Galloway. This cow was fed with superior care, and pretty well answered the expectations which had been formed with respect to the quantity of milk. The quality of it, however, was overlooked, till attention was drawn to it by a rather whimsical circumstance. The quantity of milk produced upon the farm being greater than the family required, a part of it was sold daily at a neighbouring village. The servants discovering that the quality of the whole was very seriously reduced by the milk of the new cow, they applied to the dairy maid to keep this last by itself, that it might be sold without adulterating that which was reserved for family use. The Gentleman was much amused to find that this arrangement had actually been carried into effect.

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tity of food they require, there is reason to think that accurate experiment would place their merits for the dairy higher than is commonly supposed.

The milk of one belonging to Adam Thomson Mure, Esq. in the parish of Borgue, yielded two pounds, avoirdupois, of butter, per day, for a few weeks, though fed only on pasture.

The management of the calves may appear singular, though it would be difficult to convince a Galloway farmer that it is not the very best. They are never brought up by the hand; but allowed to suck, more or less, so long as the cow gives any milk. For the first four or five months their allowance is pretty liberal. To abridge their allowance much at this period, would be considered as destructive of their future growth; afterwards, however, if their pastures are good, it is rather a measure of necessity than choice to allow them any; but the cows accustomed to be sucked refuse to give their milk, if the calves are taken off; and the milk maid in vain attempts to rob them of their portion if they are allowed to attend. This forms, perhaps, the principal objection to the rearing of calves, in the manner which nature has certainly pointed out; and with a little attention it might be completely obviated.

When the cow has her first calf, let part of the milk be taken from her for a few days before the calf is put to her to suck; when the calf has sucked enough, let it be again taken from her and the milking be completed. This is a good plan to follow always; but if it is only practised for a short time at first, this most tractable of

all animals will never forget the lesson. At any period the calf may be taken off, and she will continue to give her milk as well as if her calf had never sucked. With this improvement, which has been sometimes practised, the plan of rearing calves in Galloway, slovenly as it may appear, is perhaps preferable to any other. The act of sucking, by inducing a plentiful secretion of saliva, seems to promote digestion, and thus contribute to the health of the young animal. It approaches nearer to the plan of nature, and leads them more gradually on from milk to grass, than when fed by the pail; so that they suffer nothing by the transition. Without doubt the future growth and improvement of the animal depends on the condition in which it is kept at an early period of its life. If it is then stinted of food, or fed improperly, it will continue afterwards diminutive or unshapely. The sleek and glossy coats of the Galloway cattle, their beautiful shapes, their thriving healthy condition, their plump *enbonpoint* appearance, the farmers are unanimously of opinion, is to be ascribed, in no small degree, to the generous treatment they receive at this early period. They allow their calves to suck, therefore, not because they are unacquainted with any other plan, but because they believe this to be the best.

When, from want of inclosures, the calves cannot be kept separate from the cows, an odd expedient is used to prevent them from sucking. A muzzle is made for the calf's nose, with iron pins fastened into it; which prick the cow and oblige her to keep it off, except at the time of milking, when the muzzle is removed. Singular and slovenly as this practice may appear, it is far from ineligible, where two or three calves only are kept; though

though it would be very inconvenient with a greater number.

Too much attention cannot be given to provide them with good pastures when they are weaned. Hence it is an object with the farmers to have all their calves betwixt the 1st of January and the end of May, that they may have a supply of good pasture for some time after they are abridged of their usual quantity of milk.

When the cow misses having a calf, (unless she is a favourite one) she is fattened for the butcher. Otherwise she is kept for a breeder till twelve or fifteen years of age. The average weight of cows, in the low country, is from twenty-eight to thirty-six stones; their prices from L.10 to L.15.

An attentive farmer, who neither stints his cows of pasture, nor his calves of milk, generally rears about five calves from six cows; three calves from four cows, or four from five would, however, be much nearer the average of the district. A grazier in Wigtonshire *, who has an opportunity of extensive observation, calculates that the loss of cattle, from diseases or accidents, in various farms in the Rhyns, cannot be estimated at less than 20 per cent. or one in five, before they have reached two years of age. The Reporter, from information collected in the Stewartry, would estimate such loss at a much lower rate; and, in the course of his own experience, it has not amounted to more than one in fifty.

* Mr Shank.

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The diseases which are by far the most fatal to black cattle, are the rot, the red water, and the quarter evil, (provincially the black leg.)

The rot is very often occasioned by bad management; particularly from poor feeding in winter; and the danger is greatly aggravated if, being previously in very good condition, the cattle suffer emaciation afterwards. Some farms, however, are peculiarly liable to this disease; it is said to be often occasioned by meadows or pastures subject to frequent inundations from rivers. The disease, when once really formed, is considered as incurable.

The red water seldom proves fatal, unless when accompanied with obstructions in the alimentary canal. A great variety of remedies are prescribed for it. Those which are most in repute, appear to owe their success to their purgative, or diuretic qualities. With this view, calomel, cream of tartar, and castor oil would form a very good mixture; to be followed with copious draughts of water gruel.

The quarter evil is a violent inflammatory disorder, evidently proceeding from plethora, and rapidly hastening to mortification. It might doubtless be prevented, and sometimes cured, in its first stage, by blood-letting, and the other remedies usually employed to counteract inflammation. It is to be regretted that the diseases of black cattle have been so little studied, and that the treatment of them should have so long remained in the hands of ignorant quacks.

So much depends on good management in the rearing of cattle, that a difference of one-third or one-fourth may often be observed in those bred on similar farms, which can only be ascribed to different management.

The graziers in Galloway are generally censurable for overstocking; though they are less so now than in former times, or perhaps than the graziers of some other districts. Their greatest fault lies in their winter and spring management; and this frequently arises more from necessity than choice: for the bulk of farms cannot keep the same number of cattle in winter as in summer; and, on a reduction of prices, which often occurs about the end of autumn, they must either sell to great disadvantage, or wait the issue of the spring markets. Hence, even on the ordinary pastures, the full complement of the stock in summer still remains, which having but a scanty allowance of fodder in the beginning of winter, are compelled by hunger to devour every remnant of grass, and leave the naked fields exposed to the chilling frosts, which not a little retard subsequent vegetation. But this is not all; from the deficiency of fodder, the cattle still remaining on the pastures are eager to snatch up every pile of new grass as it rises; which being constantly kept stunted in this first vigorous period of vegetation, never afterwards acquires a full growth, and cannot feed the same stock through summer, which it might have fattened, under better management in spring.

Every experienced grazier knows the great advantage of sparing his pastures in spring till they have acquired a full cover of herbage. But it is no less true, though perhaps less adverted to, that it is of material advantage

to preserve the pastures luxuriant during the whole season of vegetation. Though by this means part of the grass should decay, or rot on the fields, it is not on that account lost, affording, as has been mentioned, good manure for the soil.

To this excellent general rule there are, however, some exceptions. Rye-grass and several other culmiferous plants, very soon grow to seed; when the flower or seed-stalk is formed, do not send out many leaves; and when the stalks have made some progress, are not relished by the cattle. If a field, abounding with such grasses, is lightly stocked in the beginning of summer, very many run into seed, and are in a great measure lost for that season. An intelligent farmer will not, therefore, deprive himself of the benefit of pasturing such fields early, when green herbage is to him of the greatest importance; nor will the pasture suffer afterwards from his so doing; for, in many of these plants, when the flower-stalk is bit down by the cattle, the leaves spring more luxuriantly; or when this is not the case, other grasses spring up in their place, whose growth would have been checked, had those been suffered to remain without being close cropped.

Some coarse pasture lands also become coarser still, the less they are pastured on, and the way to derive most benefit from them in their unimproved state, is to eat them bare at least once a-year; which is commonly best effected in the beginning of winter; and by cattle brought from the moors or highlands.

There are some pastures which would never become luxuriant, even though no cattle grazed upon them; yet these

these are far from being unproductive when kept always regularly stocked.

Much of the profits of grazing depends on a judicious selection of stock—sorting them properly—adapting them to the pastures—and selling or buying at proper times. For all this, not a few of the graziers in Galloway have been eminently qualified, and, by their superior management, have frequently, from small beginnings, arrived at opulence, even in situations where men of more ordinary talents would have utterly failed, or struggled hard through life merely to procure subsistence. Here, however, general directions can be of little advantage; the important secret is only to be acquired by much experience, minute observation, and by attending carefully to the practice, or profiting from the instructions of those who are acknowledged to be well skilled in the profession.

SECT. II.—ON DAIRIES, &c.

Chiefly from Communications by Mr. SHANK.

The introduction of *Dairies* into Galloway threatens materially to injure the breeding and rearing of cattle. Besides a variety of smaller ones, two or three on a very large scale have been established in the county of Wigton, by farmers from Ayrshire, and are confidently believed to make returns, much exceeding the ordinary profits arising from the breeding and rearing of cattle. Of course the native farmers are also adopting them:

and this alteration in the system, it is very probable, will go on till in point of profit things return to their proper level.

The cows for dairies are brought chiefly from Kyle, a district in Ayrshire, from which they take their name. They are of the short horned breed, commonly, however, of a much smaller size than the short horns of England. As milchers they far surpass the generality of Galloways. To this, however, there are some exceptions; as Galloways may be found who, along with their other valuable properties, may contend with any of the Ayrshire breed. Some are attempting dairies with Irish cows, which appears to be an injudicious practice.

The dairy system cannot be adopted with propriety unless when accompanied with the modern improvements in agriculture. To these, indeed, it is very favourable, as it affords a profitable mode of consuming turnips and potatoes, and is also calculated to produce manure to a greater extent than the common methods of grazing.

As a plentiful supply both of fodder and other vegetable food is required for winter, so in summer it is necessary to have luxuriant pastures, though not of the finest quality, as these have a greater tendency to fatten than to produce milk. It is also proper to be well supplied with cut grass; for good milchers are voracious eaters, and should be subjected to the least possible fatigue in gathering their food.

The buildings should be planned particularly with a view to this system; a circumstance which is attended with

with very considerable expence. But where all these advantages are combined, and the management is judicious, the profits have been stated, as we apprehend, very fairly, at a higher rate than can be obtained on the breeding system. In the ordinary management, even on very good pastures, they are seldom estimated above L. 8 per cow; but they are commonly stated after a deduction for casualties at L. 6. In the dairy system they are rated at L. 8 or L. 10. In some parts of Ayrshire L. 14 is confidently spoken of; but accounts of such extraordinary profits ought always to be received with caution, being founded on data which, if strictly examined, will seldom stand the test of actual experience.

For a well conducted diary, a large stock of cows is always necessary. Two or three farmers in Wigtonshire have about sixty, though in other dairies equally well managed, the numbers are only from twenty to thirty.

The calves are usually sent to the butcher at four or five weeks old. No more are reared than what are necessary to replace the cows sold off, unless, perhaps, a few queys for sale to those who intend to introduce dairies. These are all fed by the pail for three months only; and if proper attention is paid afterwards to feed them on good pastures, and with turnips during winter, at eighteen months they are said not to be inferior to those which are reared in the old way of sucking, and have received milk for a much longer period.

The dairy farmer studies to have his calves from the first of March to the first of May. From the time of calving

calving to the middle of May, the cows are fed on potatoes and hay, in the proportion of one half bushel of the former to twelve pounds of the latter, which is sufficient for twenty-four hours. From that period they are pastured in the fields night and day till a supply of cut grass can be obtained; when they remain in the house from six A. M. to 4. P. M. during the warm season. They are housed at night from the first of November, and fed with straw and turnip so long as they give milk. After this they are fed with straw only, or with hay as suits the convenience of the farmer.

The cheese made in some of the dairies in Wigtonshire is excellent*. A more detailed account of the pro-

* Mr Ralston in Fineview, on the shore of Lochryan, has probably one of the largest dairies in Scotland. The management of his cows is similar to what has been described. In 1808 they amounted to sixty; but have since been considerably augmented. He allots ten or twelve to each byre, and a dairy-maid to fifteen cows, with an assistant at the time of milking. The assistants are procured from a neighbouring village at one shilling per week. The rennet is always applied to the milk as soon as it can be conveyed to the pail. When the milk is coagulated it is cut with a knife, put into a drainer, and pressed down with a moderate weight. This operation is repeated three times, at short intervals. About three hours after, it is returned to the pail and *hagged* with a knife of a different kind, as small as possible. It is then put into the vat, and pressed down with a weight, varying from half a ton to a ton, for sixteen hours; the cheese-cloths being frequently changed. It is then taken out of the vat, and put into water, nearly at boiling heat, and allowed to remain till the water becomes milk warm. It is then replaced in the cheese press, where it remains (sixteen or twenty-four hours,) till it cease to wet the cloths. The cheeses are afterwards conveyed to the cheese room, and turned 3 times a week.—From 1200 to 1400 stones of cheeses are made annually from sixty cows. To stimulate exertion, Mr Ralston gives a premium of two guineas to the dairy-maid who has most distinguished herself for management; and to enable him to make a fair estimate of their comparative merits, they are appointed daily, in regular succession, to different lots of cows.

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cess will come, however, with greater propriety from those counties where dairies have been longer established.

If the above statements are correct, it will appear evident that the introduction of dairies may, in many situations, be attended with advantage. How far the change of system may, with propriety, be carried, perhaps experience only can determine. Hitherto cheeses made of milk without being separated from the cream, have been an article of import. As on the dairy system they can be made of as good quality, and at an inferior price to those imported from England, it is but fair to calculate that the practice may be extended with advantage, till the deficiency of the district in this article is supplied.

" It has been proposed (and in a few cases the plan
" has been adopted) to unite the breeding with the dairy
" system. In this conjoined system a sufficient number
" of trials have not yet been made to ascertain its com-
" parative advantages; but the writer of this * will ha-
" zard his own opinion formed on what he has himself
" seen and experienced.

" Where the breeding system alone is followed, the
" profits of the dairy are allowed to be very incon-
" siderable. The cheese, butter and milk not required
" in the family go as the perquisite of the farmer's wife,
" or daughters, in lieu of pin money; and such is the
" zeal to have good calves, that even where from twelve
" to twenty-four cows are kept, the product never

* Mr Shank.

" amounts

" amounts to a large sum. In favoured situations, or " under a rigid system of oeconomy, this is sometimes " rated at L. 3 per cow, where the calves are reared: " this, however, far exceeds the average amount. The " price of each *stirk** may be estimated at from L. 4 to " L. 5, which would give a total of L. 7 or L. 8. But " after a deduction to cover incidents, (for many are the " incidents, accidents, and losses to which the farmer " stands exposed) the neat proceeds from each cow " ought not to be estimated at more than L. 6.

" In a dairy of twenty or twenty-one cows, about " two-thirds of which are Galloways, where, after al- " lowing for casualties, twelve calves are reared, the " produce ought to be . . . . . L. 120
" Twelve year olds ought to bring 50

L. 170

" which is something more than L. 8 per cow. The pro- " ceeds thus stated are still inferiour to those of the com- " plete dairy system. But if all the improved part of " the country were to adopt this plan of management, " there is a chance of the produce falling in value, from " the additional quantity brought to the market, whilst " the increased price of cattle, from the number in the " market being diminished, might induce the farmers " again to betake themselves to breeding, and betwixt " such inconvenient changes in the modes of manage- " ment, a heavy loss would inevitably be sustained. " The combined system by uniting the advantages of " both, promises more steady returns, and admits of " greater or less degrees of transition from the one to

* Term for a bullock of a year old.

" the

" the other, as circumstances shall direct. The young " stock reared in this manner prescribed for dairies, if " kept till the third summer, are not inferior to those " which are reared in the common method. An oppor- " tunity is afforded of selecting the best calves for keep- " ing, whilst inferior ones in point of shape are sent to " the butcher.

" These are not the ideas of a theorist, but are chief- " ly derived from experience and observation. In fol- " lowing out the plan proposed, no doubt much atten- " tion and arrangement will be required; but these are " requisites in almost every undertaking, and without " which hope of success cannot be rationally entertain- " ed. Let not the inexperienced imagine that either in " agriculture, or in the management of live stock, they are " to enter on any regular system in one or two years; " for several years are requisite to select a proper stock, " and to execute the necessary arrangement, before the " expected returns can possibly be obtained.

" For the dairy, no cows will answer, but such as " are good milkers; and where breeding is meant to " be combined, the cows should both milk well, and " possess beauty of form. In these qualities the de- " grees of variation are endless; sometimes appear- " ing hereditary and sometimes not; for though there " is an extensive uniformity in the operations of na- " ture, there is also a surprising degree of something " resembling uncertainty and caprice, both in the in- " ternal and external qualities of her numberless pro- " ductions. So much so, that in the very brute crea- " tion, an attentive observer may discover dispositions " and propensities in endless variety; sometimes with

" features

" features strongly marked in one generation, dormant, " or not to be distinguished, for two or three, and again " appearing with all the effect of originality in the " third, fourth, or fifth generation. Yet by the judge- " ment and industry of man much may be effected. " He cannot vanquish nature, or mould her to his will, " but he can direct and regulate her operations. She " often proves her dominion by baffling his art; but " this is no reason why he should relax his endeavours; " for though he may be often baffled in his attempts, " yet by skill and perseverance, he will, for the most " part, ultimately succeed. The polled cattle of Gal- " loway, furnish a case directly in point; and prove " very clearly, what may be effected by a long, steady, " and judicious system of perseverance. By acting " upon these principles, and possessed of exquisite " powers of discernment, the justly celebrated George " Bakewell of Dishly, in Leicestershire, produced and " disseminated a stock superior to any ever before seen " in England. Besides his renowned breed of sheep, " he is said to have also bred horses and black cattle of " a description rarely equalled at the time; and other " breeders may rest assured, that they will not want " success if they have only the inclination and oppor- " tunity to follow the example."

P. S.—The Reporter takes the opportunity of remarking, that in the dairy farm of Mr Paterson, on the estate of Ardwall, an astonishing degree of neatness was displayed.

SECT.

SECT. III.—SHEEP.

From the account already given of Galloway, it will appear, that every part of the district is well adapted for rearing of sheep. Accordingly, this species of stock has, every where, more or less engaged the attention of farmers; but, in the moor and mountainous parts of it only, has that attention been paid to management which its importance certainly merits. In these, which form so large a part of both counties, sheep husbandry has long been pursued with unremitting attention—with what skill and success may be judged from the sequel.

In the lower and arable parts of the district, few sheep comparatively are kept, though both the soil and climate appear to be well adapted for some of the improved breeds. Without encroaching much on the cattle system, every farmer might keep a few; and now, that the turnip husbandry is generally followed, (though still on too small a scale) sheep might even be made subservient to improvements in agriculture. They destroy the *ragweed*, which is a great nuisance in many of the finest pastures; and, perhaps, eat up some other grasses which are rejected by black cattle. Their manure also contributes more to the improvement of pasture lands than that of any other stock. But it must be confessed, that by eating very bare, and nipping up the finest grasses, if many were kept, they would greatly injure

injure the cattle stock; and it would be matter of just regret, if the fine Galloway bullocks were to be supplanted, or deteriorated, by any breed of sheep whatever.

Attention, therefore, ought to be given, rather to improve the quality, than to increase the number of sheep stocks, in the lower districts. Various attempts have been made to improve the breed in the low lands of Galloway. One of the first was by introducing a few long wooled sheep from Lincolnshire, here called *mugs*, which were soon scattered over the country. These were chiefly kept to supply the farmers family with wool. For any other purpose, they are, indeed of very little value; being of the worst kind of long-wooled sheep; of a great size, but exceedingly coarse bones, heads and necks, with long thin carcases, narrow over the back, and in general totally deficient in point of form; voracious eaters, very slow in fattening, and of a bad quality of meat. It is no wonder, whilst such was the only species known, that the sceep husbandry should not be pursued far, even in a country, which is in all respects admirably adapted for it.

A variety of other breeds were afterwards introduced, with better success. The Leicestershire merinos, Hereford, South-down, Shetland, Cheviot, Morf and Mendip breeds, have been procured by proprietors; but, it is to be regretted, that their attempts have never been *generally* seconded by the farmers. These different breeds have seldom been either preserved pure, or judiciously crossed; and in most cases, the slight admixture of better blood, is now, by total neglect, quite imperceptible in the general mass. It is a

 singular

singular instance of extreme inattention, or want of judgment in this important branch of husbandry, that at two different sales, by the Earl of Selkirk, ewes and rams of approved breeds, some of them excellent, brought no higher prices than the ordinary stock of the country. The attempts to improve the breed, however, in spite of the grossest mismanagement, have been the means of ameliorating considerably the sheep stock in different parts of the district.

The species which bids fairest to maintain a character, and come into general use, is the small Leicestershire. It is impossible to ascertain, in almost any case, how far this breed has been preserved pure, or what crossings it has experienced. But its broad and handsome figure, its coming early to maturity, and fattening well, its short legs, fine head and neck, great tameness and docility, with small proportion of offal when slaughtered, are all recommendations, which the farmers, careless as they are, do not overlook. Even its wool, though of indifferent quality, from the large quantity produced, is understood to yield more profit than any other sort, in a country where little fine wool is manufactured, and the quantity supplied by individuals, too inconsiderable to send to a distant market.

As far as can be judged, from the few experiments that have been made, neither the Merinoes, nor the Herefords, nor the Shetlands are likely to come into repute. The South-down appears to answer extremely well on low farms. They are well formed; in quality of meat they are superior to Leicestershire, and in feeding not much inferior. In coming early to maturity, they are the nearest competitors with them. The

wool is fine and the fleece large. As they are very hardy and active, by judicious crossing, they promise to furnish a breed very well adapted for upland situations.

From time immemorial, a breed of fine-wooled sheep has been preserved in Wigtonshire, chiefly confined to a few farms in the parish of Mochrum. They are of a small size, mostly without horns, partly white-faced, but are often of a dun colour in the face and legs. Being a hardy race, they are adapted for the poorest pastures and most exposed situations. But the species most esteemed all over the moor-country, are the black-faced, which, by all the principal storemasters in Galloway, have been long considered as superior to every other. These, as an active hardy race, are peculiarly adapted for the wild mountains and barren moors of Galloway. They are not liable to the rot; endure cold and hunger to an incredible degree; are excellent diggers in deep snows; climb the mountains like goats, and not only subsist, but thrive and fatten on pastures, where it is supposed any other kind would actually perish. Though of a smaller size than the sheep of Tweedale, Crawfurd-moor or Cheviot, and of much coarser wool than the last, they are of a truer form; wider in proportion to their size, and more level along the back than most of the heath sheep. They fatten extremely well, and in quality of meat are surpassed by none. It is not, therefore, from a slavish attachment to old customs and opinions, or from ignorance of the breeds of other districts, that the Galloway storemasters have been induced to prefer their own. To say the truth, the moor farmers are, in general, as skilful and attentive in the management of a sheep-stock, as those of the low country are careless

careless, or ignorant. They always bestow much care to draw and sort their stock properly; to select the best rams; sell off all the inferior ewes and lambs; to provide, to the best of their power, a proper supply of winter pastures, and in general to do every thing that good sense dictates to improve the breed, which is, perhaps, the very best adapted for most farms in this district. A few of them have made trial, on a small scale, of the Cheviot breed, though with very doubtful success. Trials are making on a larger scale, and it is to be hoped, that it will soon be ascertained by experiment, under what circumstances it would be proper to substitute these for the black-faced breed of the country.

The only advantage of the Cheviots seems to be in the article of wool; this, however, it must be confessed, is a material one, as it sells nearly at double the price of the common wool of the black-faced. Their larger size is certainly none, as they consume a proportionally larger quantity of food. In the few trials that have been made, it is admitted, that they did not fatten so well. This circumstance, with the risk of much greater loss of lambs, justifies the extreme caution of the Galloway farmers in adopting this breed in the moor and mountainous districts.

A large and very coarse farm in the parish of Balmaghie, was stocked, a few years ago, with Cheviots; but the result of the experiment has been by no means favourable. The loss sustained in lambs, and bad condition of the stock, has more than counterbalanced the superior quality of the wool. It is the opinion of storemasters who have had the best opportunities of

observing, that in moderately low lying, and well sheltered moor farms, the introduction of the Cheviot sheep would be a material improvement.

A farm in the parish of Minnigaff, consisting partly of moor, and partly of low lands, was stocked a few years ago with Cheviot sheep. They are healthy, and not subject to greater losses than the black-faced. They have been more lightly smeared, and would do, perhaps, without smearing at all. The former stock of the farm amounted to forty score; its present only to twenty-five. The price of the black-faced, at two years old, averaged L. 15 per score: of the Cheviots L. 21. The price of the wool of the black 10s. per stone, of 28 lbs.: of the Cheviot wool 20s. Seven fleeces of each weighed about 28 lbs. So that, on a comparison, the profits will be found to be nearly equal.

Almost all the moor farmers keep a breeding stock, and usually bestow much attention to prevent the breed from degenerating, and to improve it if possible.

1. For this purpose they are careful to select the best males from their own stock, and sometimes to purchase rams of a superior quality from other farms in the district. The practice of bringing rams from the counties east of Galloway, where the sheep are of a larger size, is, after many trials, justly condemned. In the choice of rams a considerable difference of opinion prevails. With respect to figure, it is universally admitted, that the ram should be broad and level in the back, round in the body, short in the space betwixt the loins and the ribs, short legged, with a fine muzzle, and clean

forehead*; the tail not very short, and the wool thick. A thick neck, thick bones, and large horns are preferred, though, it is presumed, not on rational principles. The same qualities of form which are valuable in black cattle, are perhaps equally so in sheep. On this principle, large bones, ponderous horns, and a thick neck, an almost invariable accompaniment, ought to be considered as real defects. The prejudice in favour of these, as well as in favour of long wool and heavy smearing, appears to have originated in the north of England, as the dealers from that quarter, who purchased most of the Galloway sheep, were long partial to such qualities. This strange partiality has tended not a little to prevent the improvement of wool in the black-faced sheep. Their wool, though in general coarse, is far from being universally so. In this respect there is a remarkable difference in the stocks of different farms, which cannot be accounted for from a difference of soil and climate; and even where, in other respects, the sheep are very much alike. Those who have thick short fleeces, invariably produce the finest wool, and likewise the largest quantity, in the ratio, it is said, of three to two. By selecting such for breeders, and where they cannot be obtained from the stock of the farm, by procuring them from a neighbouring one, the wool, it is believed, might be greatly improved, without changing the breed of the country, to which the coarseness of wool seems to form the only objection.

2. In order to improve their sheep stock, the store-masters are very careful to *draught*† them properly.

* The true black-faced sheep have a lock of wool on the forehead, termed the snow-lock.

† Make a proper selection.

This is done by selling off all the lambs that are inferior in form and shapes, or in other respects improper for breeders at the time they are weaned, or at any time in the course of the autumn. These, though at the time of sale, worth only 3s. or 4s., and which, if left on the farm, would have perished, or turned out mere dwarfs, when brought into the rich pastures of the low country, become excellent sheep, and after being kept a year, are worth 18s. or 20s. each. But it is of still greater consequence to sell off all the aged and infirm ewes. Judicious farmers seldom keep ewes above five, or at most, six years of age. Though at this age they may exhibit no symptoms of weakness or decay; yet in the following season they will degenerate, and a material loss be sustained from the inferior lambs they bring, and their reduced price both in wool and carcase. An old ewe may do well enough in summer when the pastures are luxuriant; but when she is reduced to the scanty allowance of winter, and that scanty allowance must be picked from among the snows and frost, as she is become less active, her teeth failing, and her tender feet unfit to dig among the snow, she runs a greater risk than one much weaker, having the advantage of youth in her favour. It is therefore a good practice to sell all of this age; and along with these, all of any age which appear to be unthriving, or which, from bad shapes, ragged fleeces, or a bad quality of wool, might tend to depreciate the character of the stock. If, by doing this, the stock of the farm should be too much diminished, it will be no great misfortune; as the improvement in quality will repay the loss, and in a few years enable the farmer again to increase the number by reducing the sale of draughts, if he shall not think it adviseable to purchase from another farm.

3. The best storemasters are very careful to have a sufficient supply of food for their flock at all seasons. The only provision, indeed, which is made for winter, is to save, in summer, some of their low lying grounds for winter pastures. Most of the sheep-farms in Galloway have a portion of such low-lying grounds, and it is of the greatest consequence to keep these lightly stocked in the autumnal months. Where such low grounds are deficient in the farm, it is of great importance to have a low-lying farm, as a place of relief in a stormy season. The mildness of the climate, and the infrequency of long-lying snows, render any thing more than this unnecessary. Hay is very seldom given to the sheep; and when this has been done, the farmers were of opinion, that no advantage was derived from it. This, however, only proves that such occurrences as would lead them to bestow attention on feeding with hay are extremely rare: for there cannot be a doubt that sheep will thrive very well on hay, if habituated to the use of it.

4. Many of the Galloway storemasters have materially improved their sheep stocks, by reducing the number of cattle and horses. In summer these are not supposed to be hurtful, provided the farm is not in reality overstocked; but keeping many horses, or a large stock of cattle, in harvest, is certain destruction. It causes the braxy among the young sheep, and the rot among the old. If the stock is once tainted with the rot, it will continue for many years, like a hereditary disease, which perhaps it really is, and bring a bad character on a farm, which, however, might in most cases, with more propriety, be bestowed on the manager of it. In one of the largest farms in Galloway, the practice of keep-

ing black cattle has been discontinued altogether. The rot, formerly prevalent, has disappeared, and the sheep are advanced 15 or 20 per cent. in value. Instances, also, might be given, where the rot has been introduced to an alarming degree in sheep-farms by increasing the stock of black cattle. It is by no means, however, to be inferred that the practice of keeping black cattle ought to be wholly relinquished. On a better system, and to a moderate extent, it might be continued, in many cases with advantage, and, perhaps, in every case, without material injury to the sheep stock. Were agriculture a little better understood by the moor farmers, and the practice of raising green and white crops alternately, and sowing out, properly pursued, a considerable number of cattle might be reared, with little injury to the sheep pastures. In summer they would graze on the higher grounds, where there is commonly superabundance of pasture. When it became necessary to bring them to the lower grounds, they might be kept in sheds at night, which would preserve the pastures clean, and prevent the growth of *tath* grass, which occasions the rot and the braxy. Turnips, early oats, and artificial grasses, would afford such an increase of winter food for cattle, that the sheep pastures might be spared altogether. Add to this the unspeakable advantage of pasturing on lands lately sown out with rye-grass, clover, and ribb-grass, on which sheep always thrive remarkably. The extent to which this system could be carried, must always depend materially on the nature of the soil, as well as on the skill and industry of the farmer. Some will smile at the idea of recommending the turnip husbandry to moor farmers; a few experiments, however, have been already made, both in this and in other countries, and the success with which they have

have been attended, sufficiently proves that the idea is not chimerical.

5. Another circumstance which has materially contributed to the improvement of sheep stocks in Galloway, are *fences* and *inclosures*. This species of improvement on sheep farms, is perhaps farther advanced in Galloway than in any other part of the kingdom. Almost every farm is well fenced with march-dykes, and the greater part has sub-division fences, and some other inclosures. Much, however, yet remains to be done; and if, in addition to proper inclosures, belts or clumps of planting were formed on all such parts of moor farms as are adapted for them, the advantages would be incalculable. The stock would be greatly improved and the vast losses often occasioned by snow-drifts and by the death of lambs, would be in a great measure prevented. By this means, the principal objection to the introduction of the Cheviot breed of sheep would be removed. The season of lambing is always a period of anxiety to storemasters; and in cold ungenial springs, it is impossible, with the utmost care and attention of the shepherd, to prevent great losses, even among the hardy black-faced breed. To the naked Cheviot lambs these would prove certain destruction. Nothing appears to be so well adapted to afford a complete remedy to the evil as plantations of forest trees, particularly of those species of pines which are known to thrive on elevated situations; since, besides affording shelter, they contribute not a little to early vegetation.

6. Many of the moor farms might also be greatly improved, by drains for carrying off the surface water. This has already been attempted by a few individuals very

very successfully, though on a scale far too limited. In peat soils, it is attended with no advantage, unless followed up with other improvements. But in wet *boggy* soils, productive only of sprat, or such coarse grasses as sheep seldom feed upon, the advantage is very material *, not merely for the improvement of the pasture, but as the best means of preventing the rot, which is occasioned more frequently from stagnant water, than any other cause.

7. Material improvements have, of late years, been adopted in Galloway, in the mode of *smearing*. Salving lightly, or salving heavily, with tar mixed with butter only, or with a mixture of tar, butter, and train oil, tallow, hogs grease, &c.—indeed almost all the varieties which have been recommended by the speculative, or used by the practical farmer, in other parts of the kingdom, have been attempted in Galloway. The conclusions drawn by the most intelligent storemasters, from a great variety of experimentss, are—that, though, in low lying-grounds, where the climate is mild, and the soil fertile, smearing is unnecessary; yet in all coarse moors, or cold high-lying farms, in would be very injudicious to give it up—that the practice of heavy smearing, which was carried to immoderate lengths, and attended with great expence, is however, no advantage to the sheep, and detrimental to the wool—that in many farms where smearing was considered to be necessary for the whole stock, it may be restricted to the *hogs* †; —and finally, that pouring with train oil, which can be done at less expence, may perhaps answer all the purposes of smearing.

* See draining.

† The provincial name for sheep from six months to a year old.

It

It does not yet appear to be ascertained, with sufficient precision, what the advantages of smearing are. The most obvious advantage is, that it destroys *ticks* or *keds*, (hypobosca ovina) which annoy the poor animals, and by the itching sensations excited, occasion them to scratch with their teeth and feet, by which the wool is loosened, the most valuable part of the fleece often lost, and the sheep left almost naked before the inclemency of the season is past. If this were the only advantage of smearing, pouring with oil alone, or oil mixed with a very small proportion of some cheap preparation of mercury, or tobacco juice, would, doubtless, answer the purpose completely. Oil seems also to be adapted for improving the growth and quality of the wool, which, it is allowed, is another advantage of smearing. Experiments are making on mountainous farms, and on a scale which will be sufficient to determine, whether or not it is in all respects equally beneficial with salving in the common way *.

Smearing is usually performed with a mixture of tar and butter, in equal parts by measure. A pint of the mixture suffices for four, six, or eight sheep.

* Smearing also repels moisture, a material advantage on elevated situations, where rainy weather often prevails; as by wool imbibing moisture, the animal is at once chilled with the cold and overloaded with its fleece; evils which the above mentioned substitutes are not calculated to prevent.

Query, Whether or not is the yoke or natural oiliness of the wool in the animal, more efficacious for this purpose, than any artificial application. If the black-faced sheep are deficient in this quality, it would account in a satisfactory manner for the practice of smearing. The wool of the black faced has commonly less yoke than that of fine wooled sheep.

Diseases.

Diseases.—The most prevalent and fatal disease to which the sheep in Galloway are liable, is the *braxy*, or *sickness*. The sheep most liable to it are the black-faced. It attacks chiefly the young sheep, (hogs), and of these the fattest and best commonly suffer. Dry soils, pastures interspersed with fern, tath grasses of sheep, cattle, or horses, rank grasses which begin early to decay, or whose vegetation is suddenly checked by the early frosts, seem to be the principal causes of this disease. Its attacks are always sudden; its progress rapid, and termination usually fatal. The braxy is evidently a violent inflammation of the bowels, which begins, perhaps most frequently in the stomach *; sometimes in the intestines †; and sometimes in the bladder ‡; when it is termed the watery braxy. In most cases, the abdomen is greatly distended, and the appearances after death always indicate a rapid tendency to gangrene, or mortification over the whole carcase. Were it possible to expel the gasses, or elastic vapours generated in the intestines, this might very often prove a remedy. If cures have been accomplished, as has been said, by hunting the animals with dogs, it has probably been by the expulsion of such gasses. This has often proved a cure to black cattle, when distended with clover. When the disease proceeds from inflamation of the bladder, occasioned by retention of urine, it might, perhaps, in most cases, be obviated merely by putting the sheep in motion very early in the morning. This is always a very useful practice. In general, the means calculated to counteract inflammation, seem most likely to promote a cure. Of these, copious bleeding is by far the most efficacious. When the *sickness* is first

* Gastritis. † Enteritis ‡ Cystitis.

observed,

observed, let the tail and ears be cut, or veins of the legs opened; and as soon as possible, apply fomentations, with a view to promote the flowing of the blood, restore perspiration, &c. Injections, at the same time, may be used in the common form, and the animal wrapped up in a warm blanket. This, or a similar mode of treatment, has, in some cases, though it is believed, very seldom, proved efficacious.

But although the braxy is seldom cured, it might, perhaps, in most cases, be prevented. Its pre-disposing cause is evidently a plethorick habit, arising from full feeding, little exercise, or a combination of both. This indicates the propriety of *bleeding* the whole flock; or, at least, all such as might be presumed to be most obnoxious to the disease, on its first appearauce among them. In the few instances where this experiment has been made, it is said to have proved very beneficial. Another preventative, which has the test of much experience, is *change of pasture*. This disease usually commences when vegetation ceases; and doubtless, very often proceeds from the decayed half rotten vegetables which are eaten up along with the fresh grass at their roots, and which cause violent fermentation in the bowels of the animal. Turnips, salt marshes, sown grasses, or any pastures which continue always fresh, are sure preventatives. A supply of these, however, can seldom be obtained for a sheep stock. But in every case, when the sickness makes its appearance, the young sheep should be removed to those parts of the farm, which are known from experience to be most salutary. The hog fence is often least so; and when this is the case, it is always better to pasture them with the rest of the flock, than to keep them in a separate *hirsel*.

This

This causes them to take more exercise; prevents them from lying long in the morning; and thus obviates that fulness of habit, which, as has been said, is the predisposing cause of the disease. When a hog dies of the braxy, if the bowels are immediately taken out, the meat is wholesome and delicious; but if this is not done, the whole carcase, in a very short time, becomes tainted and loathsome.

As the *braxy* is most fatal to young, so the *rot* is most destructive to aged sheep. The former is chiefly prevalent on dry heathy farms; the latter is usually confined to wet soils, and green pastures. The seat of this disease is sometimes the lungs, and sometimes the liver. It seems to proceed from that laxity of fibre, which is presumed to be the predisposing cause of glandular swellings. It seems to be much more analogous to the scrophula than the scurvy* in the human species: but bears a stronger resemblance to phthisis (consumption) than either. It appears to be very often a hereditary disease, or at least the progeny of a tainted stock are more liable than others, and from slighter causes, to be attacked with it. When the liver is affected, it sometimes becomes schirrous; is often greatly enlarged; of a livid colour, with white spots, and having its ducts filled with insects like plaice (fasciolæ hepaticæ). Tubercles, or white round swellings, often appear in the lungs. They are sometimes ulcerated, and large portions of the cellular substance consumed. The progress of the disorder is commonly slow; and sheep evidently affected with it, if brought to low grounds, especially salt marshes, though, perhaps, they do not actually recover; yet its progress is so far retarded, that they

* It has been said to be a species of scurvy.

often

often bring lambs, and afterwards become fit for the butcher. Respecting the causes of this disease, it may be observed, that whatever has a tendency to break, or debilitate the constitution, or reduce the animal from plumpness to emaciation—cold, wet springs, or long continued autumnal rains, frequent frosts and thaws, or very long-lying snows, are certainly unfavourable. Over these, however, the power of man has no controul. But the mischief arising from them seldom spreads to a great extent, unless it be aggravated by overstocking, or other kinds of bad management. Under judicious and proper management, the rot, which once spread devastation to an alarming degree, is now comparatively, but little known in Galloway.

No means have been so efficacious for removing it as draughting the aged stock properly, and rejecting all those which appear to be tainted. To distinguish the good from the bad, they are handled on the small of the back, betwixt the ribs and the loins. If the flesh is solid, and firm, the ewe is pronounced sound; but if it feels soft and flaccid, with apparently a fluctuation of blubber or water, she is considered to be unfit for wintering. Another indication is taken from the eye. If, on pressing back the eyelids, the glands in which the eye-balls roll, particularly in the corner next the nose, are of a dead white colour, she is declared to be rotten; but if on the contrary the blood vessels appear thin, red, and free from matter, she is considered to be sound and healthy. Experience, minute observation, and in particular, acquaintance both with the soil and stock of a farm, must always be combined with the knowledge of general principles, to enable the farmer to draw and sort his stock judiciously.

No

On the summits of the high mountains, and in a few places of very coarse wet heath-farms, on the water of Dee, the *vanquish* frequently prevails. This disease, or mental aberration, deserves chiefly to be noticed for its singularity. Wherever it prevails, the soil is barren in the extreme, and the grass so little nutritious, that it cannot support animal life for any length of time; yet the poor creatures are so much attached to it, that when driven to better pastures, they immediately return, browze upon it with the greatest avidity, and nip up, spike after spike, the sapless plants, till they absolutely die of emaciation. Though reduced to the last extremity, if they can only be conveyed to good pastures, they never fail to recover, and become healthy sheep.

*Maggots** (a most loathsome disorder) infest the sheep of the low country, and kill numbers of them. The cure of this evil is commonly effected by clipping the parts infested as bare as possible, and pouring upon them train oil, the spirits of turpentine, aquavitæ, (whisky) or decoctions of tansy. But as the evil has often spread far before it is perceived, much of the wool, by this means is lost; and repeated applications of any of the above ingredients are sometimes necessary to effect a cure. Mercurial lotions appear to be much better. The following is an approved recipe, and may be applied in almost every case without shearing, or otherwise injuring the wool.

Take white precipitate of mercury, or calomel, one ounce, oil of turpentine, four ounces, spring water, two

* Oestrum ovis.

pounds,

pounds, or one Scots choppin. When this is to be applied, shake the mixture, so as to prevent the mercury from subsiding. Open up the wool, and pour it on the parts affected, beginning at the extremities, to prevent the maggots from escaping, and take care that all places where they are lodged, be moistened with the liquid. This will prove immediate destruction to the insects, without injuring the wool, or health of the animal. It has been often tried with complete success. The following is a much cheaper preparation of mercury, and would, it is highly probable, be also more efficacious.

Take one ounce of corrosive sublimate, and two ounces of sal ammoniac; dissolve them in two gallons and a half, or three gallons of water: let it be used in the same way with the foregoing prescription.

The principal sheep markets are, Edinburgh, Glasgow, and some towns, or market places in the north of England. Wedders at three years old, or three and a half, reared on the mountains, or coarse moors, vary in price from 14s. to 1l. 1s. and in weight from 36 to 50 lbs. avoirdupois. The smallest of the lambs, when fed on the pastures of the low country, are often very little inferior to these in weight or price at one and a half years old. The price of moor wool varies from 6s. to 12s. per stone, of 26lbs avoirdupois.

It is impossible to ascertain, with any degree of precision, the numbers sent annually from the district. From a stock of 100 score, managed in the common way, nearly 10 score of wedders are sold annually, at three years, or three and a half old. Besides these, the

farmer's sales consist chiefly of a few small lambs, some fat ewes, and such of the old ewes as are unfit to be kept another year.

The Swiss, and other mountaineers, have often been remarked for their attachment to the places of their nativity. The same attachment seems to extend even to the brute creation. Few animals, however, discover the powerful influence of this principle, in so high a degree as moor sheep. When removed from their mountains to the fertile vallies of the low country, distance of place, with all the advantages of soil and climate, cannot make them forget their home, or reconcile them to the change of situation. Haunted, it would seem, by the recollection of the scenes of their youth, they roam dissatisfied from place to place, (still, however, bending their course homeward) and appear to consider themselves only as exiles. By a wonderful instinct of nature, they are often guided through devious paths, and impelled to combat a thousand difficulties, to revisit the place of their former residence, meet once more with the companions of their youth, and resume those habits to which they had long been inured.

SECT. IV.—HORSES.

Galloway formerly possessed a breed of horses peculiar to itself, and in high estimation for the saddle; being, though small, exceedingly hardy and active. Accustomed to a rugged and mountainous country, and never employed in the draught, they were sure-footed, and

and travelled with spirit in very bad roads. They were of a larger size than the ponies of Wales, or the shelties of the north, being from twelve to fourteen hands high. It is reported that this breed originated from Spanish horses, which escaped from a vessel of the Armada, that had been wrecked on the shores of Galloway: but it appears probable from some passages in Shakespeare, that the Galloway horses were in repute at an earlier period. And as no sufficient evideuces are on record, that such a breed ever did exist, it is more natural to account for their peculiar excellence from qualities in the soil and climate, or from the state of the country in former times. The soils of Galloway, in their unimproved state, are evidently adapted for rearing such a breed of horses as has been described; aud in the moor and mountainous part of the country, a few are still to be found. But in former times, when the inhabitants were engaged in constant predatory warfare, greater value would be attached to animals so very light and active, peculiarly adapted to climb over high and rugged mountaius, and to endure fatigue, cold and hunger in a very great degree. From the hardships they had to undergo, none but such as were thriving and hardy would survive till they reached maturity. And the breed being thus constantly purged of all those of less hardy constitutions, would attain to that excellence for which it has been justly praised. It cannot be denied, however, that such of the true Galloways as still remain, resemble the Spanish horses in some very characteristic features, particularly in their faces. This similarity makes it very probable, that although the breed of Galloways be not indebted for its origin, yet it has received material improvement from such a circumstance as has been mentioned.

It is much to be regretted that this ancient breed is now almost lost. This has been occasioned chiefly by the desire of farmers to breed horses of greater weight, and better adapted for the draught; and from the little value attached, in times of tranquillity, to horses well calculated for predatory excursions.

Those which have a considerable portion of the old blood are easily distinguished by smallness of head and neck, and cleanness of bone, not usual in draught horses. They are generally of a light bay or brown, and their legs black.

The higher districts of Galloway are well adapted for rearing ponies of the medium size above mentioned; and where attention is given to the breed, which however, is too seldom the case, they are commonly excellent. But when tillage came to be an object of importance, and particularly after the introduction of wheel carriages, farmers perceived the advantage of a larger breed, and accordingly turned their attention more to enlarge the size, than to improve the shape, or spirit and activity of the animal.

The horses reared in the lower districts, and employed chiefly for draught, do not appear to be a distinct breed from the ponies of the moors; but rather a variety occasioned by breeding from those of the largest size, and gradually improving from being kept on superior pastures. Many of them accordingly, when used chiefly for the saddle, become excellent riding horses; not indeed of a very showy figure, but spirited, hardy, and capable of long persevering exertion. Though the breed has seldom been preserved pure, yet it is not difficult

difficult for connoisseurs to distinguish those which have much of the Galloway blood; and they are deservedly held in estimation as being peculiarly calculated for the different purposes of husbandry. They are round in the body, short in the back, broad and deep in the chest, broad over the loins, but without projecting knobs, well turned behind, level along the back to the shoulder, not long in the legs, nor very fine in the head and neck: their whole appearance indicates vigour and durability, and their eye commonly a sufficient degree of spirit. Though inferior in size to the dray-horses of many other districts, they are capable of performing as much labour, and enduring still more fatigue; are more easily kept, and less liable to diseases.

The breed, it is said, has been improved by the introduction of well-boned stallions from England and Ayrshire. By this means, no doubt, the size has, in many instances, been increased; but it is very probable this has been done at the expence of more valuable qualities. The farmers are still partial to such strong-boned stallions, because they find that colts bred from them suit the taste of dealers from the west country, and the Lothians; but some of the best judges are of opinion, that the breed would acquire superior excellence by a proper selection of such as are peculiar to the district. If great bulk, and large bones are really desirable qualities, they ought to be obtained rather by the choice of females than males possessed of these endowments; and by keeping them properly till they arrive at maturity, which is found to improve the true Galloway breed in size as far as is useful for the purposes of husbandry. Were it possible to find stallions which, with a large size, combined every other property, yet if the mares

were not large in proportion, the progeny, it is highly probable, would be unshapely and destitute of vigour and activity. It has been observed that the breeds of most animals are best improved by the choice of males comparatively small. If this observation be true, it will apply particularly to horses; where beauty of form, vigour of constitution, persevering hardihood, and muscular energy are so eminently desireable. The farmers frequently remark, that the breed from two year old colts, is not inferior to that from full grown stallions.

As the soil and climate of Galloway are peculiarly adapted for rearing horses, there cannot be a doubt that, under proper management, they would in general become excellent, and add much to the value of its produce. Hitherto few more have been bred than what is necessary to supply the demands of the district. A considerable number are bought up annually by dealers from the neighbouring counties, and from the north of England: Irish horses, and a few English are, however, frequently imported into Galloway.

Draught horses in the low country are from fourteen to sixteen hands high. Their prices at four years old vary from L. 15 to L. 50. This extraordinary difference of price, must, however, be ascribed not so much to an improper choice of stallions, as to inattention to the selection of brood mares, and to their progeny being frequently put into the yoke at too early a period. To extend the breed of horses on sheep farms, it is admitted, would be improper; and to pasture many on any one farm would be no less injudicious; but to graze one or two among a herd of cattle would do the cattle little injury,

injury, and, if they are of a good sort, would afford greater profit than any other stock.

SECT. V.—HOGS.

The number of swine in Galloway is very considerable; a circumstance the more extraordinary, as the introduction of them is not of old date; and many of the inhabitants still retain a prejudice against eating the flesh of this animal. The predilection for breeding hogs is justly ascribed to the extended cultivation of potatoes. These, with the offals of the kitchen, dairy, and barn-yard, constitute their principal food; but they are commonly allowed to roam at large in the pastures, and in summer have frequently no other means of subsistence. Almost every cottager keeps one, the farmers two or three each, and frequently a much greater number. The villages swarm with them; but to ascertain their number, with the same accuracy as that of other stock, is not to be expected. From the best information which could be obtained, they amount to about 10,000. This, compared with the population of the district, will nearly correspond with one to each family, which is probably not far from the truth. Of these not more than two-thirds are consumed in Galloway. The rest are bought up by dealers in the country, and commonly slaughtered at Dumfries.

A variety of species are known in Galloway, but very little attention is paid to a proper selection. The variety

riety which is most common is, perhaps, among the very worst. They are lap-eared, grow to a large size; but are coarse and ill-shaped, long-legged, and thin in the carcase; great eaters, but difficult to fatten, and long in coming to maturity. The partiality for animals of great bulk, appears in most cases to be extremely injudicious, and seems to have arisen from a total inattention to the quantity of food which they consume. Even with respect to the hog, where this could be done with very little trouble, it is commonly overlooked. A cross with boars of a small size and some of the larger varieties, appears to be a material improvement.

A species has lately been introduced, from Cumberland, by a miller on the estate of Baldoon, which from its appearance, and from the few trials which have been made, promises to be more profitable than any other yet known in this country. An idea may be formed of this species, from its resemblance in shape to the small Leicestershire breed of sheep. It is to be regretted that views of private interest have counteracted the feelings of patriotism in this miller, and prevented the breed from being extended, even in that neighbourhood.

Oeconomy in the management of hogs is chiefly conspicuous among the lower orders. Though many of the farmers are careful to provide houses and inclosures for them, they are in general far from being attentive to the most frugal methods either of rearing or fattening them. Were boiling potatoes with steam to become a general practice, it would greatly diminish the expence of feeding hogs, and be the means of still extending the breed.

The

The only method practised to prevent them from digging, is putting rings into their snouts, which are constantly giving way, and are troublesome to replace. It is a much better method to cut the two strong tendons of the snout, about an inch and a half above the nose. This may be done by a slight incision with a knife, when the animal is about two months old*.

* There is nothing peculiar in the mode of curing hams in Galloway. Those intended for sale are cured chiefly in Annan and Carlisle, and as the reporter is informed in the common way. The following method of curing beef, after a trial for many years, appears to him to be an improvement on the common method. The bullock is cut up before it is quite cold; when the meat admits of being more easily compressed. Care ought to be taken to form the pieces for packing; and, of course, pieces with large bones and all bloody pieces are reserved for a separate cask. The pieces ought to be well rubbed with rock and common salt, in equal proportions, and one-sixth or one-eighth of raw sugar. The meat should then be so packed that no large interstices may remain among the pieces, or between them and the sides of the cask. A small quantity of saltpetre may be strewed on the uppermost layers, which should be increased, if rock salt cannot be obtained, as is often the case in this part of Scotland. When the whole is packed it should be covered with a lid fitted for the mouth of the cask, and compressed with weight equal at least to one hundred weight. By this means the air is excluded; the salt is quickly dissolved; and as there are no empty spaces, though the brine be small in quantity it rises to the top and covers the beef. The quantity of salt necessary to preserve the beef free from taint for any length of time, will not exceed one half of what is commonly used. Meat cured in this way appears to be more tender, owing probably to its being cured early, or from imbibing less of the saline matter.

It is convenient to have pulleys affixed to the cieling of the cellar, or a lever so placed, that the weights may be removed, and again replaced without any trouble.

SECT.

SECT. VI.—RABBITS.

There are a few rabbits in one or two places in the Stewartry, the profits of which do not, however, afford a subject of rent separate from the other produce of the farm. There is an extensive rabbit warren in the sandy district near Glenluce. The value is estimated at L. 400 a year. Though the situation is inconvenient for sending them to market, the proprietor calculates, that on such a soil no other stock would pay nearly so well.

SECT. VII.—PIGEONS, ETC.

There are a few pigeon cots in this district, but nothing occurs in the management of these or of poultry of any description worthy of notice. The profits arising from poultry are too inconsiderable to enter into the calculations of the farmer. The price of a turkey is four shillings, of a goose, two shillings and six-pence; of common fowls, one shilling each.

SECT.

SECT. VIII.—BEES.

Galloway produces honey equal, if not superior to any in the world. The parts of the district where it is to be found of a very fine quality, are the Machers in Wigtonshire, and the parishes of Kirkcudbright, Twynholm and Tongland, in the Stewartry; but the very best, perhaps, is produced in the parish of Borgue. Its peculiar excellence depends on the profusion of wild flowers, especially the natural white clover, with which the pastures in summer are beautifully enamelled. When taken from the comb, the finest honey is beautifully transparent, and of a delicate sea-green colour. It sometimes remains in this state for many months, but commonly runs into small crystals, or becomes what is termed *candied*.

By families connected with the district, it has been carried to almost every part of the kingdom; and in London and Edinburgh has acquired great celebrity. It is always eagerly sought after, and bought up at the high prices of from sixteen shillings, to one guinea per gallon.

There are no great bee-masters in the district; but many of the farmers and cottagers keep a hive or two; some individuals, from ten to twenty, which are dispersed, however, in different gardens. The demand for honey, doubtless, would warrant a further extension of the

the culture of bees; and it is believed there are few situations better adapted for them than the coast of Galloway. Very wet and very dry seasons are reckoned equally unfavourable for the production of honey, which is always in the greatest plenty, and of the finest quality in what is called a mild dropping season.

SECT. VII.—GAME.

Few districts in Scotland, except the Highlands, are better calculated to afford amusement to sportsmen than Galloway. It has, perhaps, all the varieties of birds, which are to be found in North Britain. There are a few ptarmigans in the highest mountains; the moors are pretty well supplied with grouse; black game are to be found in many places; and hares and partridges abound through almost every part of the district. Many of the sloping banks are planted, or covered with coppice, which never fail to invite the woodcock to pay his annual visits, and to remain during winter. Pheasants were, some years ago, introduced by Lord Galloway into Wigtonshire; and have since, by Lord Selkirk and Mr Murray, been brought into the Stewartry. If these beautiful birds escape the ravages of poachers, from the mildness of the climate, and gradual increase of plantations, it may be expected, that they will soon become numerous, and add not a little to the charms of rural scenery.

CHAP.

CHAP. XVI.

RURAL ŒCONOMY.

SECT. I.—LABOUR.

All the operations of husbandry are carried on in Galloway chiefly by hired servants, who receive their board in the farmer's family, or by cottagers. Women servants are hired for the half year; men servants commonly for the year; and cottagers always for a year or a longer period. The wages of women servants, for half a-year, vary from 50s. to L. 4, and are nearly the same in winter as in summer. Men servants receive from L. 14 to L. 20 a-year. Cottagers are paid partly in money, and partly by what is termed a *benefit*. This consists of a house, garden, and fuel; as much corn, or meal and potatoes, as are thought necessary for the maintenance of their families; and sometimes maintenance for a cow or a pig. The amount of the whole may be estimated, on an average, at L. 30 per annum.

Cottagers are considered to be more expensive than house servants; but are usually more steady, submissive, and

and attached to the interests of their masters. The fondness of roaming from place to place, and changing masters every year or half year, is a serious and just ground of complaint among the farmers, and is often connected with another—insubordination and insolence, which it is difficult to repress; as, from the great demand for servants, a certificate of good behaviour from a former master is seldom required for obtaining a new place. Another circumstance which has, perhaps, contributed not a little to this evil, is the practice common through all Galloway, of hiring servants three or four months before the ensuing term; by which means it often happens that the character of the servant is not known, when the time arrives of entering into a new engagement. It would be a material improvement on this branch of rural œconomy, if the same regulations were adopted here as in many other parts of the kingdom—to hire servants only at stated periods, at no great intervals from the term, and to demand always a certificate of their good behaviour under a former master. This would also prevent those feuds and animosities which often happen among families from hiring servants without the consent or knowledge of their masters †.

Besides the ordinary farm servants, it is necessary, in some parts of the country, to have additional labourers for hay-making; and, in the whole arable district, a great number is wanted in the time of harvest. From the small number of cottages, and the total want of large towns, these must be procured chiefly from the vil-

† The number of servants being seldom equal to the demand, and good ones always difficult to be procured, this leads the farmers to engage them long before the term, and not unfrequently to procure them from a neighbour by a species of stealth.

lages;

lages; and the supply being unequal to the demand, the price of labour is much greater in harvest than at the other seasons of the year. Reapers, when hired by the day, which however is seldom the case, receive from 1s. 8d. to 2s.; when hired for the whole harvest, women receive from 40s. to 45s.; men from 50s. to 55s.; and sometimes, if very good workmen, L. 3. In the west end of the district, from its vicinity to Ireland, whence there is always an influx of labourers at this season, and in the eastern extremity, in the neighbourhood of Dumfries, the wages are commonly a little lower than in the interior.

The small quantity of labour performed, and the great quantity of victuals consumed by the reapers of Galloway, has been the subject of complaint or ridicule to persons from other districts. Mr Webster*, in his Survey, has represented them "as devoting many hours "a-day to eating and drinking, and so cramming them-"selves with victuals at all times, that it is difficult to "conceive how it is possible for them to perform any "work." The ridicule, however, seems to be entirely misplaced; and would have been much more appropriate, if applied to almost any other class in the community. The reapers in Galloway certainly do fare very well; but, from their active exertions at this busy season, to procure subsistence for the whole community, they are surely entitled, without being stigmatized with gluttony, to participate of something more than what is barely sufficient for their own. This is, perhaps, the only season when the presence of the master is necessary, rather to moderate and restrain, than to stimulate,

* Author of the former Survey.

their

their activity. No other stimulus is commonly requisite than the principle of emulation by which they are actuated, and their natural anxiety to bring the labours of harvest to a speedy termination, knowing that their contract will then also terminate. They have three meals a-day; and the hours of labour are, usually, from six o'clock in the morning to seven at night, with an interval of three quarters of an hour to breakfast, and perhaps a little more for dinner. If any other, or longer, intervals ever did take place, they are now every where discontinued. Four reapers are computed to cut a Scotch acre per day, at the average rate of working. The women perform as much work as the men. The band of reapers consists nearly of equal numbers of each. Each individual employed is supposed to reap six acres; which affords a criterion to ascertain the number of labourers requisite for the harvest.

At other seasons, the amount of labour performed by hired servants is said to be less in Galloway than in some other districts of Scotland. In few districts are their wages higher; and in none, perhaps, do they fare better.

The wages of day-labourers vary according to the species of work performed. A common labourer, in summer, receives 1s. 6d. with board; a mower from 2s. to 2s. 6d.; carpenters from 2s. to 2s. 6d.; masons from 3s. to 3s. 6d.

In a country thinly inhabited, the price of labour will, it may be presumed, always advance with the exertions in making improvement. As in Galloway the increase of population has by no means kept pace with the improvements

ments projected, or carrying on, the wages of labourers, and mechanics of every description, have advanced with a rapidity seldom equalled, and which is severely complained of by farmers and proprietors. Yet it does not appear that the price of labour has advanced faster than the rent or value of land; though perhaps it is more augmented than that of almost any other commodity. In the course of the last thirty years, the price of land, without any improvements but such as have been made by the tenant, has advanced in the proportion of three to one. The advance upon labour appears to be nearly in the same ratio. The expences of carrying on the operations of husbandry have not, however, increased nearly in an equal proportion with the price of labour. From great improvements in the implements of husbandry, from superior dexterity in labourers and artisans, and perhaps from a more regular and orderly course of industry through all the different seasons of the year, in many of these the expence is not augmented at all, and in some of them it is actually diminished. It would not be too much to affirm, that the same quantity of labour is now executed, and to far better purpose, by one-half of the number of men and horses which would have been required for performing it at the period above mentioned. To this abridgment of labour, as well as to the improvements of the soil, it must, perhaps, be ascribed, that grain, like many articles of manufacture, has not advanced in price in the same proportion as land or labour, or even cattle; and cannot be considered as a just criterion by which to judge of the depreciation of money.

In very few instances are the common labours of husbandry done by the piece. If this could be effect-

ed, it would, doubtless, be a very material improvement; as, when the earnings are always in proportion to the work performed, greater exertions will be made than even under the inspection of the most vigilant master; and it is but common justice that the labourer should always be rewarded according to his industry. This, too, without destroying subordination, would extend even to the lowest orders the idea of liberty and independence; make them rejoice when the morning invited them to labour, or when the evening brought to their recollection the tasks they had performed.

Provisions of all sorts, with the exception of butcher-meat, are, in this district, comparatively cheap. Potatoes, oat-meal, barley, cheese, butter, &c. which constitute the chief articles of food for the peasantry, may be estimated from 10 to 20 per cent. lower than in the eastern, and some of the western counties of Scotland.

The price of grain is regulated chiefly by the Liverpool market, reckoning a deduction of 6d. per bushel for expences of freight, commission, insurance, and profit. On potatoes these expences amount to 9d. per cwt.

FIARS

FIARS *in the* STEWARTRY *of* KIRKCUDBRIGHT *for Seven Years; the Barley, Bear, and Oats calculated by the Stewartry Boll of Eleven Winchester Bushels; the Wheat by the Bushel, and the Oat-meal by the Boll of Sixteen Stones Troy.*

Years.	*Wheat*		*Barley.*			*Bear.*			*Common Oats.*			*Oat-meal.*		
	s.	*d.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*
1801	3	6	2	12	3	2	4	0	1	7	6	1	14	8
1802	6	6	1	11	4	1	2	0	1	1	0	1	11	4
1803	6	3	1	9	4	1	4	9	1	4	9	1	13	4
1804	3	6	2	9	6	2	2	2	1	8	2	1	16	4
1805	7	3	2	0	4	1	13	0	1	4	9	1	14	8
1806	7	10	2	5	7	1	18	6	1	7	6	1	19	1½
1807	8	2	2	4	11				1	15	9	2	8	0

From what has been stated above, it may be inferred, that in seasons of great scarcity, Galloway has suffered less than most places in the kingdom. If the pressure of such calamities has sometimes been severely felt in the towns and villages, this must be ascribed chiefly to the poverty of the inhabitants.

N. B. As the prices of grain are always similar, or the same in both counties, extracts of the fiars of Wigtonshire appeared to be unnecessary.

SECT. II.—FUEL.

Coals are brought from Whitehaven, and other places in the North of England; and cost, at the different sea-ports in Galloway, from 9d. to 9½d. per cwt. or 112 libs. In the higher districts of the Stewartry, they are procured from Ayrshire; and, when brought into the interior, may be estimated at 1s. varying according to the distance either from the shore or the confines of Ayrshire. But, except upon the sea-coast, by far the greatest part of the inhabitants make use of peats chiefly for fuel. In most places of the district these are procured at a very moderate expence; being cut with the spade, and dried in the same way as in other parts of the kingdom. But the practice of *baking peats* is, perhaps, peculiar to Galloway. In many parts of the lower district, the peat-soil is of so loose a texture, that, when cut with the spade, it crumbles into pieces, and becomes unfit for fuel. This radical defect of the peat may, however, be remedied by baking. The process is conducted in the following manner: When the peat-earth is carried from the pit, it is disposed of in layers, with a convenient distance between them for *spread-ground*; it is then well-watered, and trampled, or *wrought* * with the spade, till it is converted into a soft paste, of the consistence of plaster-lime, and afterwards formed into loaves in the same manner that the baker prepares his dough before it is put into the oven. The peat-earth, thus prepared, becomes, when dried,

* Provincial term for breaking it in pieces, and mixing it with water.

very

very hard and durable: but, in many cases, it is obtained at an expence exceeding the price of coals, independent of the great injury done to the farms by the injudicious method of cutting up much land, which otherwise might be rendered valuable. Nothing, indeed, can be more preposterous than the plans of the old farmers in the management of their peat-mosses. Common sense, one would think, might suggest to begin at the lower extremity, (having first opened a drain to carry off the stagnant water) and then to cut the moss regularly along, but never below the level of the drain; or to intersect it with ditches or canals, which would both furnish peats and serve to keep the moss always dry. But instead of this, they dig peat-pots every where indiscriminately; commonly, however, near the outsides of the moss, as if on purpose to render it good for nothing as soon as possible; or to prepare pits for drowning their cattle, a circumstance which not unfrequently happens. But what appears most extraordinary, is, that the abuse is still tolerated by proprietors, and whilst most of the other absurdities of the old management are now abolished, this seems destined to remain as a monument, how difficult it is to correct even the greatest abuses, when of long continuance.

CHAP. XVII.

POLITICAL OECONOMY.

SECT. I.—ROADS.

There is no species of rural improvement, which, for a series of years, has more attracted the attention of the gentlemen in Galloway, than the planning, making, and keeping in repair the turnpike and parochial roads. This is an improvement of such importance in itself, and so intimately connected with almost every other, that it well deserves all the attention bestowed upon it, and will amply repay the large sums annually expended for this purpose.

According to the antient custom of Scotland, established by a general law of the kingdom, the inhabitants of every parish were bound to employ themselves for

for six days every year, in repairing the parish roads, the occupiers of land providing horses and implements, in proportion to the extent of their possessions. That annual *statute labour* was the only fund for keeping roads in repair; and was perhaps sufficient for the purpose in those remote periods when wheel-carriages were unknown; where the produce of almost every farm was consumed by its own inhabitants, and where the utmost refinement of luxury did not extend beyond travelling on horseback. The work thus imposed was sufficient to give a slight repair to the most impassable steps of the roads; but it would never be productive of any general or effectual improvement. A crowd of people were collected without order or method, under overseers who were in general both ignorant and careless; and who had little authority over them. The object of almost every individual, was not so much to improve the roads as to get through the period prescribed by law, with as little personal trouble as possible. Such desultory and feeble exertions were utterly inadequate to the task of making in a proper manner any considerable extent of road; and as the necessity of more extensive and substantial operations was felt, it became evident that a new system was necessary. Accordingly in the year 1779, the Stewartry of Kirkcudbright obtained an act of Parliament for imposing an assessment on the inhabitants and occupiers of lands, in lieu of the statute labour. In Wigtonshire a similar assessment was imposed in the year 1780 or 1781. Previous to this period, scarcely was there in either county a road deserving that denomination. The paths originally tracked out by the inhabitants had in some instances been made passable (though not without difficulty) for a wheel carriage; but as this had been effected by a number of successive petty improvements,

the original tracks were invariably adhered to; and in a country of so broken and uneven a surface, it was naturally to be expected that steep ascents and descents would frequently occur. The tracks had at first been chosen by horsemen, whose chief object was to avoid bogs and morasses, and to whom a steep hill was a trifling inconvenience, when compensated by the advantage of passing over dry ground. This radical and incurable defect rendered these roads, after every improvement, extremely inconvenient, and precluded the possibility of conveying heavy loads without an extravagant number of horses.

About forty-five years ago the military road from Dumfries to Portpatrick was made, at the expence of Government, in a very substantial manner, but without deviating materially from the old line, which, like other tracks through the country, was carried from one height to another, without any rational object. This was the more unaccountable, because the surveyor appointed by Government * was allowed to chuse any line which he preferred; and a liberal grant had been placed at his disposal, for making the whole road completely and substantially. But the importance of level roads was either not then understood, or it had appeared impracticable to make a level road through so uneven a country. To those who understand the modern improvements in this art, the line of the military road must appear extremely preposterous †. Injudiciously, however, as it was planned,

* Colonel Rixon.

† Perhaps, indeed, it was not more so than many great roads in the most opulent parts of England, where the old tracks are still adhered to, and where the surveyors appear to have no idea of the improvements which are practicable.

ned, the advantages of a substantial and well made road for carriages were very striking, in a country were nothing of the kind had been made before; and this work appears to have had considerable effect in calling the attention of the gentlemen to the importance of a general improvement of the roads of the district.

After the conversion of the statute labour had produced a regular fund for the purpose, exertions were made, in many parts of the country, for repairing the roads in a substantial manner; and in some instances for conducting them in a more convenient direction. But the first attempts of this kind were carried on in a very injudicious manner; no systematic plan was adhered to, and the most trifling objects of individual interest, were often allowed to obstruct important improvements. Fortunately for the country, an example of more liberal and enlightened management was given, before the work of renewing the roads had made very great progress. Basil William, Lord Daer, as has been already mentioned, had early turned his attention to this important branch of rural œconomy. He perceived the essential consequence of good roads as a preliminary step to every species of agricultural improvement; and saw that the expence of making them anew in the most convenient directions, though very considerable, would be speedily and amply repaid by the advanced value of the farms, which would thereby obtain the benefit of a cheap and easy conveyance for manures and for the produce of the land. He was well acquainted with the valuable improvements which had been suggested on this subject by Sir George Clerk of Pennycuick, the first man in Scotland who appears to have conceived the idea of conducting roads through hilly and moun-

tainous districts, with a systematic attention to the most level direction. Lord Daer's mind was of too comprehensive a cast, not to perceive the full importance of this suggestion, and the extreme difference, for the purposes of agricultural accommodation, between a level road, and one made along the old steep and inconvenient tracks, however substantially executed. He also discovered, from attentive observation, that, notwithstanding the very uneven surface of this district, a small sacrifice in respect of distance would, in every instance, render it practicable to avoid any very steep ascent: in many instances, he found that great eminences might be avoided without any increase of distance whatever. In carrying these principles into execution, Lord Daer met with much obstruction from the prejudices and contracted views of many of the country gentlemen, whose concurrence was necessary for effecting his plans. The Earl of Selkirk, however, reposing entire confidence in the judgment of his son, entered warmly into his views, and placed at his disposal adequate funds for carrying them into effect, so far as his own property extended. Fortunately the estates, of which Lord Daer had thus the management, were of sufficient extent to afford considerable scope for these improvements, without interfering with the lands of other proprietors who might not be disposed to promote them. His first operations, therefore, were confined to his paternal property; upon which he planned a completely new set of roads. By attentively combining the different objects required for the accommodation of the whole estate, it was found that the old and useless tracks, which might be relinquished, exceeded in extent the new lines which it was necessary to make; and that thus, notwithstanding the great expence of making the new roads, a saving

ing would ultimately be obtained by the diminished annual expence of repairing them.

The plans thus devised by Lord Daer, were too extensive to be effected at once, but he proceeded in a progressive manner, executing a proportion every year; and this system has been followed out by his successors, till the whole is now nearly completed. In no part of the kingdom, perhaps, can a property of the same extent be found more completely accommodated in this respect. So entire a change, as that which Lord Daer devised, involved undoubtedly a considerable direct expence, besides the incidental inconvenience of occupying good land, and deranging inclosures, by which new fences became requisite. These circumstances, to a mind of less liberality, might have appeared a decisive objection to the plan. They did not escape Lord Daer's attention; but he had satisfied himself, by accurate calculation, and the result has clearly proved, that these drawbacks, though of no trifling moment, did not deserve to be placed in competition with the important improvement to which they were subservient.

In planning the new roads which he judged necessary, Lord Daer had no assistance, but that of a surveyor instructed by himself. He was of necessity his own engineer; for the profession of a road engineer, which is now in high estimation in Scotland, was then unknown. It is, perhaps, in some degree, from his exertions, that such a profession has originated. Adopting the general principles suggested by Sir George Clerk, he had to apply them in circumstances of much greater difficulty, in a country more broken, uneven, and intricate. In many places the natural obstacles were so great

great, that to devise a level track, seemed to be a task beyond the utmost efforts of ingenuity. In some of these difficult situations, the methods which had been followed by Sir George Clerk were found insufficient; and after trying various other contrivances, Lord Daer was led to devise the application of the spirit level, to the laying out of roads. The superior precision of the lines laid out by this method was very evident; and this valuable improvement has since been adopted by all the eminent road engineers in Scotland.

Lord Daer's improvements on the roads in his paternal property, had been carried to a considerable extent, before he could prevail on his neighbours to concur in making any great public road on the same principles. A few of the more liberal, early joined in recommending them; but the prejudices of the majority were so confirmed, that to combat them seemed to be a hopeless task. It was not till a short time before Lord Daer's death, that he could obtain their concurrence to execute a few miles of a public road in a distant part of the country, according to the plan he suggested: nor was this obtained without some pecuniary sacrifice on his part. The experiment, however, was of great consequence; the marked contrast between the road made under his direction, and the rest of the line, served (more than any thing which had hitherto occurred) to open the eyes of the country at large to the benefit of level roads, and the practicability of making them among the wildest mountains of Galloway. About this time the surprizing improvements effected by the use of lime, in the interior parts of the country, had excited a very eager desire for the improvement of roads. It became obvious that the assessment imposed in lieu of statute

labour was insufficient, even for the parochial or interior roads, and that the principal lines of road for opening the general communications through the country, could not be improved, or supported, without the aid of tolls; yet the different views and prejudices of proprietors were such, that though Lord Daer first brought forward the draft of an act of Parliament in 1792, to double the rate of conversion, to establish tolls on the great thorough-fare roads, and to introduce a new system of road-making; it was not till the year 1796, that the bill went to Parliament, with the concurrence of the county.

One of the first works of the commissioners, under this new act, was to make an entirely new road in lieu of the military road from Dumfries to Castle-Douglas. It was a fortunate circumstance, (and perhaps not entirely fortuitous) that the line adopted for this road, lay for many miles through a moorish country, almost destitute of cultivation. There was scarcely the vestige of an old road to mislead the judgment of those who had to lay out the new line; and the proprietors of the lands adjoining, had the prospect of so great an increase in the value of their property, that few of them were disposed to give much obstruction to the making of the road in any line most advantageous to the public. A land surveyor, who had been instructed under Lord Daer, was employed to lay it out; and a line which the chain and the level had proved to be the best, was adopted without modification. A whole stage was thus executed upon new and accurate principles. Its striking superiority to all the old roads in the county, and in particular, to that for which it was was substituted, fully demonstrated the justness of the views upon which it was planned, and finally dissipated the prejudices which had

had so long prevailed upon the subject. All the roads which have since been executed in the Stewartry of Kirkcudbright, have been planned upon the same principles; and these are now so generally understood, and so well appreciated, that there is little probability that any new road in the county can now be carried in a very bad direction. The improvements thus effected in the Stewartry of Kirkcudbright, have excited a due attention on the part of many gentlemen in the adjoining counties; and in Wigtonshire considerable progress has already been made in renewing the principal roads in level directions. Many of the roads in both counties, long since recommended by Lord Daer, and neglected as chimerical, have now been executed upon his plans with universal approbation.

In the Stewartry of Kirkcudbright, it has been adopted as a fixed rule, that an engineer must lay out with proper instruments every new line of road, nor can any old road be renewed or repaired at an expence of more than 20l. per mile, without remitting to the engineer to examine whether the line be a proper one or not*. The new line thus laid out, must be examined by a committee of the trustees. The committee make their report to the general meeting, by whom it must be approved, before the work can be carried into execution. By the Stewartry road-act 1796, the assessment for parochial roads may be increased, at the discretion of the trustees, to the extent of 30s. on every farm, which is rated in the valuation roll at 100l. Scots. This is paid by the

* In Wigtonshire, a similar rule was adopted, but it is to be regretted, that it has not been so rigidly adhered to in that county as in the Stewartry.

occupiers

occupiers of the lands. Tolls have also been erected under the same act, on six of the principal roads in the Stewartry; most of which have been made by subscriptions advanced on the credit of the tolls. In the case of parochial roads also, it is usual for proprietors to subscribe or advance money on the credit of the parish funds; and in some instances far beyond what they can ever repay, in order to expedite the making of these roads, in which they feel a particular interest.

In the parish of Borgue, a few years ago, Mr Thomson Mure, of Muncraig, agreed to advance money for making the whole additional roads in the parish, the assessment being appropriated for paying the interest and keeping the roads in repair, with the reservation of a part to serve as a sinking fund for liquidating the debt. By this spirited exertion, the parish has obtained the accommodation of a complete set of good roads, much sooner than could have been effected by the regular operation of the annual assessment.

Roads are made in Galloway of various dimensions. The principal one in the district, between Dumfries and Newton-Stewart, a distance of fifty-two miles, is forty feet wide between the fences; five feet being allotted for making a side path for foot travellers.

In Wigtonshire, the toll-road from Newton-Stewart to Portpatrick, a distance of thirty-five miles, in width is only thirty feet betwixt the fences. The road is formed of that width, by cutting small drains on each side; the sides next to the road are sloped, the materials from these water tables are thrown into the centre of the road, and formed into a regular curve or portion of a large

large circle, to allow the water to run freely from the centre of the road to either water table. Of this space, however, sixteen feet are gravelled; the depth of gravel depends upon the kind of materials which form the foundation; but in general, it is fourteen inches deep in the centre, and ten inches deep at the extremities. About eight or nine years ago, the expence of forming and gravelling the road of these dimensions, cost from 6s. to 8s. per rood, of twenty feet lineal measure; that part of it which has been made lately, cost ten shillings; and some very difficult places from fifty shillings to three pounds ten shillings per rood.

With very few exceptions, the acclivity is only one in forty; the greatest acclivity is one in thirty, and much of it is nearly a perfect level.

Most of the other toll-roads are nearly of the same dimensions. Parish roads are usually made from twenty-four to thirty feet wide, and covered with gravel fourteen feet. The greatest attention has been paid to have them as nearly level as possible.

The original contractors are, or ought to be, bound to keep them in repair for a certain number of years, for a specified sum annually. This seems to be the best method to have the original contract faithfully implemented.

A mistaken oeconomy frequently prevails in giving too small a sum for making roads, and of course they are executed superficially. In roads, as in almost every other species of improvement, it will be found, that to have the work executed in a very substantial manner, is always most

most satisfactory, and ultimately the most oeconomical plan. This holds more especially when the roads are taken through boggy grounds and flow mosses, which, when well executed, are the most durable of any; but if much broken before they are repaired, the expence is little inferior to that of their original formation.

Road-makers are often very careless in separating the large stones from the gravel. When these cannot easily be broken, they ought always to be placed in the bottom of the road, and small ones, not exceeding the size of a common hen egg, carefully packed above them, and strongly compressed. It would be of great advantage that the pressure should be made as uniformly as possible to give the same degree of solidity to every part of the road, and thus prevent afterwards inequalities upon its surface. For this purpose a very heavy roller might be usefully employed, to form a sort of pavement on which the gravel should be spread. This would add not a little to the durability of the road, and prevent the jolting and interruption of carriages, and stumbling of horses, often occasioned from such neglect. Filling up the ruts regularly during dry weather, and clearing the water tables where necessary, would produce a saving afterwards in repairs, far beyond the expences incurred.

The division of roads into toll and parish roads adopted in both counties, appears to be very judicious. It seems, indeed, to be equitable, that all roads should be toll roads, or that every traveller should pay in proportion to the benefit he derives from them. But the expence of collecting the money, and the evil of creating a number of unproductive labourers, operates as a bar to this, and renders it expedient that all roads which

are not very much frequented should be made by assessments on districts, or by private subscription.

If the present excellent condition of the roads in Galloway, and particularly in the Stewartry, be compared with the wretched state in which they were only twenty or thirty years ago, no district in the kingdom will afford a better opportunity of calculating the immense advantages which arise from this species of public improvement. The other subsequent improvements of the county, which have advanced with so much rapidity, must in no small degree be ascribed to this primary one. Prior to this, from the hilly, boggy, and broken surface of the district, inland carriage was extremely expensive, and, in many cases, altogether impracticable. In many places where new lines of road have been formed, the aspect of the country has, in a few years, been completely changed, and lands the most barren have been rendered very productive. From these and other circumstances, it may not be too much to calculate that the money thus expended brings a return of ten, twenty, or thirty per cent. to the proprietors, or possessors of lands, independent of the benefits which accrue from them to the public.

Suppose the public roads of a parish to amount to fifteen miles, these may be made substantially on a new line for L. 100 per mile, or the gross sum of L. 1500
Ten miles of roads to farm houses at L. 50 . . 500

L. 2000

The interest of L. 2000 thus expended forms a permanent burden of L. 100. But on the other hand, supposing

posing the carts necessary for the purposes of husbandry to amount to 100
These, with the expences of horses and servants, cannot be estimated at less than L. 40 each annually, which multiplied, ... 40

amount to, L. 4000

If by the improvement of the roads a reduction of one-tenth of this establishment is effected, or one-tenth more labour performed, which is certainly a very moderate assumption, there results a saving of L. 400 annually, or L. 20 per cent. is obtained for the money expended. It is taken for granted that the new roads being once substantially made, may be kept always in good repair, at an expence not exceeding that which was necessary to make the old ones merely passable. The above calculation, vague as it certainly is, and from the nature of the subject must be, is, however, we apprehend, sufficient to shew that the advantages of having good roads, are very far from being overrated.

SECT. II.—BRIDGES.

The improvement of the roads in Galloway, has been necessarily accompanied by a corresponding improvement of the bridges. In Wigtonshire, there are so few rivers, or even brooks of any great magnitude, that the alteration of the roads, in that part of the district, has been attended with but a small expence for bridges.

The case, however, is very different in the Stewartry. There, the country is so much intersected by rivers and smaller streams, that it is almost impossible to alter any line of road without additional bridges; and in consequence of this, the very extensive alterations made in the roads in the course of the last twenty years, have rendered bridges a very serious source of expence.

By the road act, obtained in 1796, the trustees have the power of assessing the Stewartry in a sum, not exceeding four shillings and two-pence on each hundred pounds Scots valuation, for building and repairing bridges; and this assessment has been at the maximum for ten or twelve years past. No part of this fund, however, is applicable to bridges on toll roads: the expence of these, must be defrayed out of the toll funds, which is usually accomplished, in the first instance, by borrowing money on the credit of the tolls. In the case of expensive bridges, these legal funds have generally been aided, not only by liberal private subscriptions, but also, by special voluntary assessments, made by the commissioners of supply.

Of the bridges lately erected in the Stewartry, by far the most important one, is that over the river Dee at Tongland, about two miles above Kirkcudbright. The magnitude of the work, and the style of the execution, entitle it to particular notice. It was projected in the year 1803, when Mr Telford, the celebrated civil engineer, was employed to examine the situation, and to furnish a plan. But as the plan which he gave required a smoother style of masonry than could be easily executed in the country, or than seemed to accord with the bold and rugged scenery on the banks of the river, it was

was, with his approbation, altered, in so far as related to the external architecture, agreeably to a drawing, by Mr Nasmyth, an eminent painter at Edinburgh.

The bridge consists of one magnificent arch, of one hundred and ten feet span, which springs from a solid rock on each side, and receives the whole waters of the Dee. At each end of this arch are three narrow gothic arches, which serve to connect it with the high banks of the river, and by that means to form a level road way. Semicircular towers are carried up on each side, between the great arch and the small ones, and the parapets resting on a block cornice, are finished with battlements. The interior part of the arch is formed of a red sand-stone brought from Annan in Dumfries-shire, but all the external work is executed with a dun or dark grey sand-stone from the island of Arran*.

The blocks of this are massy, and accurately jointed but very roughly hewed, a style of finishing, equally suited to the situation, and to the architecture of the bridge.

The work was contracted for in the autumn of 1803, by country tradesmen, at somewhat less than three thousand pounds, and the foundation stone was laid, on the 22d of March 1804, by Sir Alex. Gordon, as Provincial Grand Master Mason of the district. On the 15th of August following, the river having swelled to an uncommon height, swept away the centre, after the trades-

* The duty on the stone added very much to the expence of this meritorious work; a circumstance which strongly points out the impolicy of that tax.

men had begun to throw the arch. By this accident, the contractors were extremely disheartened, and the trustees becoming doubtful of their ability to fulfil their contract, determined, before proceeding farther, to consult Mr Telford. After examining the work, he reported, that the accident had arisen, from the improper construction of the centre; that the contractors, though good practical masons, had no experience in the execution of works of such magnitude; and that from ignorance they had contracted for a sum for which it was quite impossible to build the bridge.

Under all these circumstances, the trustees, with becoming liberality, agreed to relieve the contractors from their engagement; and Mr Telford * having most obligingly offered to send a skilful superintendant from England, they resolved to finish the bridge by day labour, under his direction. It was not till March 1805, however, that the work was recommenced, and the bridge was opened for passengers in November 1806, although not completely finished till May 1808.

In consequence of the loss, from the accident which has been mentioned, and the additional expence that unavoidably attends the execution of any great work by day labour, joined to the increase in the price of materials from the renewal of the war, the cost of the bridge greatly exceeded what was at first expected; at the same time it must be remembered, that the calculations of the country tradesmen were founded on most erro-

* The trustees were much indebted to this Gentleman, for the liberality with which he acted in affording them his assistance.

neous

neous data; and, perhaps, after all, it was not possible to have executed it, at a much cheaper rate.

The gross expence has been seven thousand, three hundred and fifty pounds; but as this includes an accumulation of interest of money, arising from the circumstance of the work having been carried on upon a credit, while the county provided for the payment of the debt by certain annual grants, it is probable, that the actual expence has been under seven thousand pounds. Of this, one thousand, one hundred pounds was defrayed by private subscriptions, and the remainder by special grants from the commissioners of supply. Since the work was finished it has been surveyed, and highly approved of, by Mr Telford.

The erection of such a bridge, in a remote and thinly peopled district—and that too, in defiance of the powerful obstacle, arising from the necessity of importing stones, serves strongly to mark the enterprising spirit and liberal views of the landholders; and the admirable manner in which the architecture and style of finishing is adapted to the situation, reflects great credit on their taste and judgement.

SECT. III.—WEIGHTS AND MEASURES.

The variety of weights and measures made use of in Galloway is greater, perhaps, than in almost any county in Scotland. Pecks of different dimensions were till very

lately used in different parts of the district. No less than four different weights, bearing the same denomination, *(stones)* were employed for a variety of articles. The inconvenience, and perhaps frauds and mistakes arising from this circumstance, have, however, without any legislative interference, in a great measure led to the correction of the evil. The Winchester bushel is now everywhere used for grain; and the avoirdupois weight, though not in common use for some articles, yet, as its relative proportion to other weights is universally known, can always be resorted to as a common standard. Though grain is sold by measure, the weight also is commonly specified in the bargain. Lime is sold by the Carlisle bushel equal to three Winchester. Coals are sold in Galloway by a measure called a barrel, which holds eighty-five English gallons: for convenience they are sold by the half barrel, containing forty-two gallons and a half, and weighing about two hundreds and a a quarter.

SECT. IV.—MANUFACTURES.

Manufacures of soap and leather are carried on in several of the towns and villages, though not nearly to an extent sufficient to supply the demands of the district. There are two paper mills in the Stewartry, where this article is manufactured, though of inferior quality, and to a very small extent. Various attempts have also been made to establish cotton and woollen manufactures. The woollen never succeeded, and the cotton

ton has for many years been upon the decline. A cotton mill on a very large scale was erected at Newton Stewart by a company, the principal partners of which were Mr David Dale and Sir William Douglass. The business was carried on extensively by them for several years; but it proved an unprofitable speculation. The house and machinery were lately sold to another company, for little more than half the original cost. This company has again commenced business, though on a much more limited scale. At Gatehouse of Fleet four cotton mills were erected, and business carried on with some spirit for many years; but from the general stagnation of the trade, and other causes unnecessary to mention, this branch of business is now very much on the decline; though, in more favourable times, it is to be hoped, it will again revive. In several of the towns and villages a considerable number of weavers are employed by the Glasgow and Carlisle manufacturers.

The want of sufficient population, which has retarded improvements in agriculture, operates more powerfully as a bar to the progress of manufactures. It is difficult indeed to assign any other cause, unless it be admitted that speculations on this branch of industry have already extended too far through the kingdom in general. Both Gatehouse and Newton-Stewart appear to be very favourable situations for manufacturing towns. The supplies of water for machinery are abundant: they are in the neighbourhood of an excellent grain country; the roads are good in all directions; seaports are convenient; they have the greatest facility of intercourse with England and Ireland: fuel is not very expensive; and provisions cheaper than in any of the manufacturing towns in England or the west of Scotland.

land. Notwithstanding such advantages, manufactures and commerce have never been propitious to these, or to any of the towns of Galloway.

It is rare to meet with thriving manufactories, except in the vicinity of coals, or at no great distance from the spot where the raw material is procured. The commission which distant manufacturers are obliged to pay for the raw material, and the sales of the goods when again fit for market, are great impediments in the way of transplanting manufactures; besides, loss is often sustained in the original purchase and ultimate sales; when these are conducted through the medium of a broker, who cannot act in emergencies without instructions from his constituent: and as frequent fluctuations take place in the market; of these the manufacturers on the spot take advantage, whilst those who live at a distance do not hear of them; or if they should, from the want of good information respecting the cause, are misled and injured by making improper speculations. The Galloway manufacturers have to trust intirely to the Glasgow or Liverpool market, and all the disadvantages mentioned affect them in no small degree. These are a few of the difficulties with which manufacturers in this district have had occasion to struggle.

SECT. V.—COMMERCE.

The chief, and indeed almost the only exports from Galloway consist of grain, wool, sheep and black cattle,

tle, which are sent (as has been mentioned) to England, and to some other parts of Scotland. The imports are lime, coals, wool, all sorts of groceries and manufactured goods, brought chiefly from England. Wood is sometimes imported directly from America, and both wood and iron from the Baltic. But though attempts have been made to enlarge the commerce of the country by trading to the West Indies, as well as to America and the Baltic on a larger scale; and also to embark in the herring fishery—these attempts have never hitherto been succesful; and Kirkcudbright and Stranraer, notwithstanding their excellent natural harbours, remain, as commercial towns, nearly in the same state in which they were at the beginning of last century.

SECT. VI.—POOR.

It ought to be regarded as a fortunate circumstance in the police of this district, that neither poors rates, nor any species of legal assessment for the poor, has hitherto been established in it. The number of the poor, however, in many places, is not inconsiderable. They are chiefly supported by collections in the churches, with the interest of small sums bequeathed by charitable individuals—resources, which, when compared with the numbers who depend upon them, will appear scanty, and by no means adequate to their support. Yet this class of the community is not, perhaps, less comfortable here, than in any other part of the united kingdom; a circumstance which must be ascribed in no small degree

gree to the judicious and œconomical management of kirk-sessions, who are the only *acting* trustees on these funds; and no doubt, still more to that honest pride, so generally prevalent even among the lowest orders of the inhabitants of North Britain, which leads them to spurn at the idea of seeking relief from any charities, public or private, whilst it is possible for them to earn the means of subsistence.

Another measure employed to avert, or to alleviate the evils of poverty, is the institution of *friendly* or *benevolent* societies. Some of these have been long established in the towns and villages, where they are most wanted. The numbers admitted into them are daily increasing; and similar establishments are also formed occasionally in country parishes. Nothing seems better calculated to foster a noble sense of independence, and preserve the general respectability of the labouring class of the community than such associations, by means of which the small savings of youth, and health, which otherwise perhaps would have been dissipated by luxury, are secured as a fund for their relief in sickness and old age. In this country, no bad consequences whatever are known to have resulted from them; and they have, therefore, very properly, met with encouragement from many of those who, in all probability, will never have occasion to depend upon them for relief.

But what seems chiefly to have contributed to prevent the poor from becoming a heavy burden to the community, is the good education received, and the habits of early industry formed among the lower orders. In no part of the kingdom are the means of education more easily accessible—an important privilege, which appears

appears to be every where duly appreciated. It would attach an indelible reproach to any one, even of the lowest class, to neglect the education of his children. In aid of the legal provision, many of the parish schools are endowed by private contributions; and, being in general supplied with good teachers, such, even of the lowest orders, as are distinguished by talents and application, have the means of acquiring that knowledge which enables them afterwards, successfully, to push their fortunes in the world. But it is of far greater importance, that in all the schools of Galloway, and most of the counties in Scotland, it forms a part of the discipline to instil into the minds of youth the principles of morality and religion, which lays the foundation of that future good conduct, by which its inhabitants, with fewer exceptions, perhaps, than those of any other country, have long been distinguished. Though from this no splendid results may appear to arise, yet, even in a political view, it ought not to be overlooked; since the influence of such good principles and good conduct, gradually and insensibly pervading every order of the community, tends to attach them to that good government under which they live; duly to appreciate its blessings; and thus proves the best security against all those evils which would arise from internal distraction or foreign invasion.

TABLE

TABLE I.

Statistical Table of the Schools, &c. and Poor of Kirkcudbrightshire by Parishes.

Parishes.	No. of Schools.	No. of Scholars.	Salaries.			Mortification.			Quarter wages.			No. of Poor.	Total Income of Poor Collections, &c.		
			£.	s.	d.	£.	s.	d.	£.	s.	d.		£.	s.	d.
Anwoth	1	40	16	13	4				16	0	0	18	20	0	0
Balmaclellan	2	80	22	4	5	500*	0	0	15	0	0	10	18	0	0
Balmaghie	3	160	33	6	8				40	0	0	9	18	0	0
Borgue	1	130	16	13	4	2000*	0	0	40	0	0	24	75	0	0
Buittle	2	100	33	6	8	33	0	0	40	0	0	12	21	0	0
Carsfairn	1	40	16	13	4				16	0	0	10	17	10	0
Colvend	2	100	33	6	8				36	0	0	9	17	0	0
Crossmichael	3	200	45	0	0				60	0	0	15	30	0	0
Dalry	3	120	33	6	8	1000	0	0	30	0	0	15	24	0	0
Girthon	2	130	22	4	5				50	0	0	30	30	0	0
Irongray	2	70	33	6	8				30	0	0	12	38	0	0
Kells	1	80	22	4	5				20	0	0	14	30	0	0
Kelton	3	160	33	6	8				80	0	0	16	30	0	0
Kirkbean	1	90	16	13	4	1008	4	0	16	0	0	10	30	0	0
Kirkcudbright	5	280	153	6	8				172	0	0	51	68	0	0
Kirkgunzeon	1	40	16	13	4				18	0	0	7	8	10	0
Kirkmabreck	1	70	16	13	4				28	10	0	18	42	0	0
Kirkpat.-Durham	1	80	40	0	0	300	0	0	10	0	0	15	25	0	0
Lochrutton	1	50	16	13	4				20	0	0	10	20	0	0
Minnigaff	1	70	22	4	5				35	0	0	32	60	0	0
New Abbey	1	130	18	10	0	250	0	0	25	0	0	12	43	0	0
Orr, or Urr	3	170	22	4	5				50	0	0	14	32	0	0
Parton	2	60	33	6	8				24	0	0	8	14	0	0
Terregles	1	50	16	13	4				20	0	0	8	14	0	0
Troqueer	5	280	22	4	5				70	0	0	80	60	0	0
Tongland	1	80	22	4	5				20	0	0	9	32	0	0
Twynholm	1	80	22	4	5	50	0	0	24	0	0	14	22	10	0
Rerwick	2	100	33	6	8				40	0	0	12	22	0	0
Total	53	3030	834	7	4	5126	4	0	1055	10	0	486	861	10	0

* Laid out in land which rents at L. 100 per annum.

TABLE II.

Statistical Table of Schools, &c. and Poor of Wigtonshire by Parishes.

Parishes.	No. of Schools.	No. of Scholars.	Salaries.			Mortification.			Quarter wages.			No. of Poor.	Total Income of Poor Collections, &c.		
			£.	s.	d.	£.	s.	d.	£.	s.	d.		£.	s.	d.
Glasserton	1	60	16	13	4				24	0	0	10	14	0	0
Inch	2	100	20	0	0				40	0	0	30	30	0	0
Kirkcolm	6	210	20	0	0				55	0	0	20	26	10	0
Kirkinner	1	50	22	4	5				20	0	0	24	17	0	0
Kirkmaiden	2	130	16	13	4	5	0	0	52	0	0	40	49	0	0
Kirkcowan	1	30	25	0	0				12	0	0	15	15	0	0
Leswalt	1	40	16	13	4				16	0	0	16	30	0	0
New Luce	1	30	16	13	4	2	5	0	16	0	0	7	24	0	0
Old Luce	1	60	16	13	4	0	18	0	10	0	0	16	21	0	0
Mochrum	1	60	22	4	5				24	0	0	12	20	0	0
Penningham	2	174	24	0	0	14	0	0	87	0	0	34	65	0	0
Portpatrick	2	80	22	4	5				40	0	0	16	24	0	0
Sorbie	1	60	16	13	4				24	0	0	18	24	0	0
Stranraer	3	155	22	4	5				100	0	0	30	40	0	0
Stoneykirk	2	250	24	0	0				125	0	0	25	26	5	0
Whithorn	2	140	33	6	8				60	0	0	20	25	0	0
Wigton	2	140	40	0	0				70	0	0	40	60	0	0
Total	37	1869	375	4	4	22	3	0	775	0	0	373	510	15	0

REMARKS—1. ON PROVISIONS FOR THE POOR.

To obviate the evils of poverty, and to alleviate them when they occur, are objects of primary importance in the internal government of every country. Any material facts relative to this subject, therefore, certainly merit the particular attention of the Board—of the Legislature—and of all who take any part in regulating the police of particular districts. In this branch of political œconomy, there is, perhaps, nothing peculiar to Galloway; and a minute account of it can only be valuable, as it forms a part of the general management common through all Scotland, which, it is believed, is not inferior to that of any other kingdom. From the table prefixed it will appear that the provision for the poor is very unequal, and that their numbers differ much in different parishes, and are by no means in a ratio, proportioned to the population. In every parish, however, with the exception of those which contain large villages, the provision for the poor individually, is not materially different. They appear to have increased in proportion to their resources. This, under the most vigilant administration of poor's funds, will probably always happen. Hence, a doubt is entertained, whether large donations for behoof of the poor, are attended with any important benefit, or whether they are not productive of some real evils. They have been represented, like parochial assessments, as affording encouragement to sloth, idleness, and vice—as drying up other sources of charity,

charity, as filling parishes with beggars—and as frequently making the poor themselves querulous and discontented. There can be no doubt, that poor's rates have always produced such effects. But the small pittance arising from the ordinary emoluments of the poor in Scotland, even in parishes where such charitable donations have been most liberal, can have no effect in relaxing established habits of industry; and such is the prudent and discreet management of kirk-sessions, who are the trustees on these funds, that none, unless disabled by age or infirmities, can expect to derive assistance from them. Where the emoluments are small, it is granted the poor on the rolls are also few. But are they not sometimes too few? Does it not sometimes happen that persons really necessitous have their claims refused, for no other reason, but because the means are wanting to provide for them? Emergencies often occur when other resources of charity are too distant, or too slow in their operation. When their funds are more ample, kirk-sessions have it in their power to provide for such emergencies—to give a temporary relief to those who would be very unwilling to become a perpetual burden—to afford assistance, in private, to such as would almost perish, rather than expose their wants to the public.

Still, however, it must be admitted, that it is of great importance, both in a moral and political point of view, that the means of relief for the poor should remain concealed till the moment they are wanted—that they should be granted from charity, rather than enforced by law—and received as a boon, not demanded as a right.

 From

From the circumstances which have been mentioned, that virtuous pride, and love of independence, for which the lower orders in Scotland have long been distinguished, throughout the whole of this district, still remain unimpaired. "There are many instances of persons extremely poor, who refuse to take assistance from the parish funds; and though they may submit to receive charity from a neighbour, cannot reconcile their minds to the idea of being added to the poors list. The descendants of infirm and aged parents, testify a laudable inclination to support them from their own earnings, rather than suffer them to "come upon the parish." It is no unusual occurrence to find even servant girls, struggling with difficulties, and œconomically sparing a part of their wages to keep their parents from the dishonour they attach to receiving aid from the poors box. This dignity of mind, and the acts of filial duty connected with it, tend in no small degree to cement and prolong the mutual affection which ought to subsist between parents and their children. As the feeble unprotected state of the child increases the mother's fondness, so, from a beautiful principle in our nature, the poverty and distresses of parents, and the very difficulties their children have to combat in alleviating them, produce a degree of attachment among the lower orders, to which the opulent too often are strangers. How different is the case in England! There the inhabitants are led to believe, and the poor's laws bear them out in this belief, that whenever they become unfit to support themselves, the parish is bound to maintain them. This resource

resource is resorted to so frequently, and as a matter of right, that no disgrace attaches to the situation.

The filial tie is thus weakened, or completely dissolved; and children, imitating some of the inferior animals, seem to know their parents no longer than they necessarily derive support from them."

2. REMARKS ON SCHOOLS, &c.

It will be seen from the table prefixed, that the provision for school-masters, though still very moderate, is, on the whole, perhaps, better than in the generality of districts through the kingdom. And the schools, in most parishes, are so situate, as in a great measure to supersede the necessity of private teachers. The school salaries, notwithstanding the augmentation granted by a late act of Parliament, are indeed so small, as not to afford any great inducement for men of talents or literature, to dedicate their attention to this laborious, though most useful profession. But in aid of these, many charitable persons have given, or bequeathed to different parishes, sums of money to be expended on the education of youth. In the few instances where these have been expended on the purchase of land, they have afforded a permanent resource, increasing with the increased expence of living. When this has not been the case, such donations, though liberal, have rarely answered the generous intentions of the donors. But another circumstance is of still greater importance, viz. the

choice of the trustees, and the regulations for future management. From inattention to this, the money, in some cases, has been actually lost; and often so misapplied, as to answer no good purposes whatever. These consequences have too frequently occurred where donations were made payable after the decease of the donor. We might specify examples in the district, where all these misfortunes have ensued; but it is a more pleasing task, to record one instance, in which, it is presumed, all of them will be avoided—an instance of liberality no less beneficial to the parish on which it has been bestowed, than creditable to the benevolence and good sense of the giver.

* Thomas Rainy, Esq. of Dominica, with a generosity which has seldom been equalled, anno 1802, remitted to Borgue, his native parish, 2400l. for erecting and endowing an academy, 600l. for behoof of the poor, and 400l. (given at an after period) to assist meritorious, but poor scholars, in prosecuting their studies at the university. This liberal donation was accompanied with a letter, appointing the minister, and some of the principal heritors, trustees on the donation for the schools; and containing a few general, but very sensible and pertinent directions, respecting the regulations to be adopted; but leaving the trustees to make what alterations to them should seem proper, who, being on the spot, might be presumed to be better judges of what was expedient, than one who was long absent from his native country; the minister and elders being appointed managers of the money given for the use of the poor.

Mr Rainy's letters, having been considered at different meetings of the trustees, appeared to them so sensible and

and judicious, that they have founded the regulations of the academy entirely upon them. The letters have been engrossed in the records of probative writs of the county, as well as in the minute-book, which contains an account of their transactions. Part of the money is expended in an advantageous purchase of land, and the remainder vested in landed security.

The good effects of this institution have already been sensibly felt in the parish, as few seminaries for the education of youth are better conducted. None can reflect greater credit on its founder.

The transaction merits publicity for an example to others. The writer of this memoir owes it as a tribute to friendship and gratitude.

† About 25 years ago, 500l. Sterling were bequeathed for establishing a free school in Balmaclellan, by Mr Murdoch, a merchant in Glasgow. A short time after, this money was expended in a purchase of land, which has so much advanced in value, that it is now let at 100l. of yearly rent.

‡ The school of Dalry was endowed, more than half a century ago in a similar manner, but to a much greater extent: besides a good dwelling house, and seven or eight acres of glebe, the interest of 1000l. Sterling was appropriated for the use of the school-master. In both these schools, all the children belonging to the parish have the privilege of gratuitous education. The good effects of this have, in no small degree, been defeated, from their extreme carelessness in attending the

 school.

school. It seems unnecessary to notice particularly many other smaller endowments.

N. B. In the account of the schools, and state of the poor, there are perhaps a few slight inaccuracies, too trivial, however, to be of any importance.

SECT. VII.—POPULATION.

In 1755, the population of Galloway amounted to 37,671—in 1792-1798 to 47,942—in 1801 to 51,843—and in 1809, to 53,982.

The following tables exhibit a state of the population by parishes, at these different periods.

TABLE I.

Statistical Table of the Population of Kirkcudbrightshire by Parishes.

Parishes.	Population, 1801.	Population, 1809.	Population in villages, 1809
Anwoth	637	762	264
Balmaclellan	554	560	50
Balmaghie	860	870	150
Borgue	820	840	50
Buittle	863	914	
Carsfairn	461	461	50
Colvend	1,106	1,120	
Crossmichael	770	913	80
Dalry	1,184	1,200	300
Girthon	1,730	1,730	1000
Irongray	730	700	50
Kells	778	780	350
Kelton	1,905	2000	1100
Kirkbean	696	700	180
Kirkcudbright	2,380	2420	1600
Kirkgunzeon	545	550	
Kirkmabreck	1,212	1250	551
Kirkpat.-Durham	1,007	1035	355
Lochrutton	528	590	50
Minnigaff	1,609	1609	600
New Abbey	832	832	150
Orr, or Urr	1,719	2010	1050
Parton	426	426	
Terregles	510	510	
Troqueer	2,774	2900	1450
Tongland	636	690	80
Twynham	620	700	120
Rerwick	1,166	1206	400
Total	29,058	30,278	10,030

TABLE II.

Statistical Table of the Population of Wigtonshire by Parishes.

Parishes.	Population, 1801.	Population, 1809.	Population, in villages, 1809.
Glasserton	860	860	
Inch	1577	1600	300
Kirkcolm	1191	1317	220
Kirkinner	1160	1210	60
Kirkmaiden	1613	1750	150
Kirkcowan	787	796	150
Leswalt	3329	1450	160
New Luce	368	420	
Old Luce	1221	1400	350
Mochrum	1113	1163	250
Penningham	2566	2560	1700
Portpatrick	1060	1100	520
Sorbie	1091	1135	630
Stranraer	1722	1750	1750
Stonykirk	1848	1848	220
Whithorn	1904	1904	1000
Wigton	1475	1500	1040
Total	22,885	23,772	8,500

From this account it appears, that for more than half a century the population of Galloway has been encreasing rapidly. The probability is, that, barring any great public calamity, it will long continue to increase. Prior to the first mentioned period, no authentic records of population, known to the reporter, are in existence. As far, however, as can be judged, from tradition, and from the appearances of the country, this district had once been more populous than at the period just mentioned. The late increase of population can only be ascribed to the enlargement of towns, and erection of villages: for although, in a few parishes, the inhabitants of the country have increased, yet, in by far the greatest number, they have diminished. In so far as this has arisen from the annexation of farms, it cannot be considered as a loss to the community; for by this means, the lands are much better cultivated, and their produce, of course, much augmented. But where it has been occasioned by reducing the number of cottagers, or other productive labourers, in a country still susceptible of much higher degrees of cultivation, it is certainly an evil which demands some efficient measures of reform. Building cottages on all large farms seems to be the best expedient to afford a supply of useful labourers. Very small villages or detached houses, held in lease, not from the farmer, but the proprietor, as a nursery for such labourers as work by the day, or by the piece, would also be attended with many advantages. In different parts of the country there are such small villages, and households, of labourers, or artizans, who are in general very sober and industrious. Such might also be very usefully employed for reclaiming pieces of waste land, were suitable encouragement granted, by long leases, or otherwise, to stimulate their exertions.

On

On all large estates, many of these wastes are to be found, which *have* remained, and perhaps, for ages *will* remain in absolute sterility; which, however, if consigned to the management of the industrious poor, would be the means of subsisting them, and rearing their families; without subjecting them to the forfeiture of their independence, or any temptation to relax their wonted habits of industry. When such spots are held by a long tenure, it is astonishing what exertions are made to bring every corner into cultivation; to husband the little stock of manure; to raise all the varieties of crop, and not to suffer a stalk of grain or handful of grass to be lost, through neglect or useless expenditure. Such little tenements ought to be of sufficient extent to enable the occupiers to keep a milch cow; a vast object to their humble ambition, and no great sacrifice to the proprietor; nay commonly a real advantage, (even though the rent be trifling) when wastes are to be reclaimed.

Such households, or small tenements, ought not, however, to be multiplied, farther than the cultivation of wastes, or demand for labourers in the neighbourhood requires. It is admitted that *these* tenements, or *cottages*, are the best means to obtain a supply of labourers; their numbers may yet be augmented to a large extent, as there is still an *increasing* demand for labour in almost every part of the country. The present population of Galloway, far from being equal to the resources of subsistence, is by no means adequate to carry on its necessary improvements. Though it may appear like a paradox, it is certainly a truth, that its inhabitants might be increased many thousands, without diminishing the surplus of disposeable produce, which it

it affords for the subsistence of other districts. Independent of reclaiming of waste lands, or bringing into tillage such as had not before been cultivated, many of the ordinary and essential improvements of agriculture are neglected, or imperfectly executed, from no want of enterprize, but merely from the difficulty of procuring workmen.

But although Galloway, in general, is evidently under-peopled, the population of some parts of it appears to be superabundant. The idea of increasing the value of their estates, by letting a small part of them in feu, and the hopes (by much too sanguine) of establishing manufactories, encouraged many proprietors to plan the erection of villages on their estates: whilst the annexation of farms, the abolition of cottages, with the gilded prospects of becoming independent proprietors, compelled, or induced many to become settlers. The overflowing population of Ireland, annually pouring into Galloway, has been very auspicious to the growth of these new establishments. Some of them have increased with wonderful rapidity, and been lately erected into burghs of barony.

It is, doubtless, necessity, oftener than choice, that drives the inhabitants of the country into villages, where the expences of living are greater, the resources of industry less, their former habits of life often counteracted, and nothing but perpetuity of settlement offered in compensation.

After all, though the practice of building villages may have extended too far, it ought not in every case to be condemned. When they are conveniently situated for

for commerce or manufactures; at first inhabited chiefly by tradesmen and artizans, or such as can live independent of manual labour, and gradually increase with the increasing population of the country; they not only promote the improvement of the adjacent lands, but essentially contribute to the strength, riches, and prosperity of the state. Otherwise, however, such rapid growths in the *body politic* are like sudden excrescences in the natural body; which absorb the vital juices; and far from being symptoms of health, and strength, are indications only of rottenness and decay.

SECT. VIII.—MODE OF LIVING.

The manner of living among the lower orders, though far from being luxurious, is as good, perhaps, as in any other part of Scotland; farm servants fare better than in many other counties.

Potatoes and oatmeal, it is true, constitute a considerable portion of their food; but they are allowed, once a day, a sufficient quantity of butcher meat, which, with barley broth and vegetables, affords them a substantial meal. Cottagers, and other day labourers, who live at their own expence, often subsist very poorly; yet, though they also work very hard, they are commonly healthy and robust, and often attain to greater longevity than the other orders of the community.

It

It is, however, to be regretted, that the poor cottagers are too often deprived of their milch cows, their chief resource for the sustenance of their helpless families; and that, from the high duty on malt, beer, even of the smallest kind, is also placed beyond their reach. Hence they are driven to substitute tea, a useless and enervating liquor, though the only thing like luxury, which their circumstances can afford.

CHAP.

CHAP. XVIII.

OBSTACLES TO IMPROVEMENT.

SECT. I.—OBSTACLES TO, AND MEANS OF IMPROVEMENT.

THE principal obstacles to the improvement of this district have been already mentioned, and the means of removing them pointed out, in the preceding parts of the work. This appeared to be the most natural way of considering what otherwise should have been comprized under this article. It will be seen in the account of the *State of Property* and *Occupancy*, that the chief obstacles which long impeded improvement in Galloway, and in every other part of Scotland, was want of capital. The state of the country has, in this respect, no doubt, undergone a happy alteration. Both proprietors and farmers, notwithstanding their loud complaints

complaints of the grievous pressure of public burdens, are enabled to live in a very different stile, and to pursue very different plans of management, from their frugal, yet needy ancestors. Hence improvements are rapidly advancing in many parts of the district. But, of the proprietors, whilst some have overgrown estates, and are adding yearly to their rent rolls, others are involved in debt, yet are unwilling to sell a part to enable them to improve the remainder of their lands. Among the occupiers, though many have sufficient capital to carry on, in the best stile, all the necessary operations of husbandry, and not only to make every improvement, for which they hope to receive compensation; but even to embark, from time to time, in new speculations; still, perhaps, the greatest number are restrained by want of capital from making any such exertions. They are obliged to practise, not the best, but the cheapest modes of improvement; their returns must not only be certain but immediate; and the very system of management which would be most profitable to persons of sufficient capital, in a year or two would reduce them to bankruptcy. Hence they beggar their farms to save themselves from beggary; or if some feeble efforts are made to put their farms in a better condition, the process goes on so slowly, that the lease is far advanced before any thing very effectual is done; and the last years of it are employed in exhausting the few improvements made in the preceding. It is scarcely possible by any stipulations in a lease, to prevent or to remedy this evil. Humanity recoils at the idea of prosecuting a poor tenant for the breach of a contract which he really was not able to fulfil.

It

It may not be improper here to notice the advantages to improvement in agriculture arising from Banking Companies, with which the district is very well supplied. The abuse of them has been already mentioned, and the mischiefs flowing from it described with as much fairness and candour as possible. Notwithstanding these abuses, it is however also but fair to acknowledge, that Banks have been a powerful instrument for removing the impediments arising from deficiency of capital, and of exciting the spirit, as well as of affording the means of improvement. The sudden and remarkable change produced upon the state of agriculture, in this and the neighbouring counties by the establishment of the Douglas and Heron Banking Company, was acknowledged, even by those who were no friends to its establishment. It must be confessed, indeed, that this was only momentary. That extensive speculation, so ruinous in its consequences to many individuals, gave a temporary shock to public credit, paralyzed almost every exertion, and concurring with other calamitous circumstances, threatened to obliterate even the traces of improvement, which had been begun with so much spirit, but had yet acquired no degree of stability. Very unfortunately many of those who had most distinguished themselves by their active exertions to ameliorate the state of husbandry, were deeply involved in the consequences of this failure. A great change of property ensued, and a series of years elapsed before either the capital, credit, or improvements of the country could be replaced in their former situation. No conclusions, however, can be drawn against the banking system, from the effects of this ill planned, and ill-conducted speculation. Though the good effects of the Douglas and Heron Bank were transient, yet when other banks came to be established

established on better principles, and under better management, their influence on the improvement of the country has been extensive and permanent. The great facility afforded, of managing all pecuniary transactions through the medium of these institutions, appears to have produced the same effects as real increase of capital; and the good effects of this being once experienced, encouragement was given to extend the banking system; branches were established in different parts of the district, and not only proprietors and extensive dealers, but also very many of the farmers have now cash, or deposit accounts, and negociate most of their payments through the medium of these establishments*.

* The first bank-office in Galloway was a branch of the Bank o Scotland, established at Wigton in 1784. Another branch was established at Kirkcudbright in 1789-90. The British Linen Company erected a branch at Wigton in 1785, which was transferred to Newton-Stewart 1801. Sir William Douglass, Mr Napier, &c. erected a bank at Castle Douglas in June 1806. A bank-office is also kept at Stranraer, which, however, is very limited in its discounts. Previous to these establishments, several of the Galloway proprietors and farmers continued to transact business (after the failure of Douglass, Heron, and Co.) with other banks at Dumfries. A branch of the British Linen Company was erected there in 1771, and a branch of the Bank of Scotland in 1774. From the inconvenient distance, and other causes, no doubt the negociations were comparatively very limited; but since banks were established within the bounds of the district, they have gradually extended to an astonishing degree, and are probably, as was the case with the Douglass and Heron Company, now extended too far.

SECT. II.—*Another Obstacle to the Improvement of Agriculture is "the Want of Disseminated Knowledge."*

The farmers of Galloway, as has been mentioned, are sensible and intelligent men. Many of them have received a liberal education; and are fond of reading, or conversing with men of letters: but very few have been educated particularly with a view to acquire the knowledge of their own profession; or are even moderately acquainted with those branches of science which are most intimately connected with it. It is, indeed, singular and unaccountable, that whilst to most other professions, an appropriate education is always considered as essentially necessary—whilst the physician, the lawyer, the divine, the merchant, the manufacturer, nay, even mechanics and artizans, serve long apprenticeships, or devote years to study under the ablest masters, before they expect to arrive at eminence in their respective professions, yet that in farming, one of the most pleasing and useful of all arts, which comprises a vast variety of objects, and which certainly requires no inconsiderable talents, it should be imagined that no apprenticeship, or preparatory education whatever is requisite. The sons of farmers, it is true, may be considered as professionally educated. Bred to the business from their earliest years, they have not only the means of knowing, but are often taught to perform all the common operations of husbandry. These acquirements are not to be considered as unnecessary or of little importance. If theory and

and practice be really incompatible; the former ought surely to give place to the latter. But the rude ages, which alone could give rise to this idea, are past long since. And as agriculture approaches more and more to a science, the utility of studying its principles will become daily more apparent. It is, indeed, the business of the philosopher, rather than that of the common farmer, to collect and arrange facts, form theories, and frame systems; but it cannot admit of a doubt, that if rational theories be formed, the knowledge and application of them are no less necessary in this, than in any other liberal profession, to all those who would wish to practise it on an extensive scale, or hope to carry it to the highest improvement of which it is susceptible.

And for this purpose something more is surely necessary, than merely to observe the common routine of husbandry in the neighbourhood, or occasionally to peruse those periodical publications which are sometimes to be found in the libraries of farmers. Very few, however, think of any thing further, and the generality do not even avail themselves of such easy means of acquiring information. It cannot therefore appear surprising, that the art itself should advance by slow degrees; and still less so, that when real and essential improvements have been adopted by individuals, they should not quickly pervade a whole district. Such impediments to the improvement of agriculture are now disappearing, perhaps faster in Galloway than in many other districts. Some of the farmers shew a laudable desire to become acquainted with every new discovery, and to improve upon the old. There are three or four public libraries in the district, which contain some of the best books in husbandry. A few of them have made

tours through other districts most noted for their husbandry, on purpose to observe their plans, and adopt their improvements; and many of them, when occasionally travelling into distant parts of the kingdom, have not been inattentive observers of the practice of the best farmers.

SECT. III.—AGRICULTURAL SOCIETIES.

An agricultural society formed at Dumfries about forty years ago, (with which many of the gentlemen of Galloway were connected) was dissolved many years since; but was considered, while subsisting, to be of utility in promoting various improvements in husbandry.

About ten years ago, two such societies were established in Wigtonshire. The reporter has not had an opportunity of being minutely informed of their proceedings; but forming his opinion from the respectable characters of many of the members of which they are composed; from the account of a variety of useful measures and regulations which they have adopted; and in particular from their zeal to acquire, and their readiness to communicate such information as may be calculated to promote the improvement of the country; he cannot entertain a doubt that very considerable advantages have already arisen from these patriotic institutions. It is but justice to remark, that no where in the district has the state of agriculture more rapidly improved than on the farms

farms of the different members which compose these associations.

The following extract from the minutes of Rhynn's Agricultural Society, on its first institution, will shew that the members of this association do not appear to have overrated the advantages to be expected from it. "It is equally an error to expect very much, and to despair of any thing. Where high and sanguine expectations are formed, disappointment must ensue. The good which such institutions produce is silent and progressive, and the less apt, on that account, to strike the attention of the superficial and prejudiced. The Highland Society, the National Board of Agriculture, and even the Royal Society, which consists of princes, learned men, and of the first philosophers of the age, have been represented as productive of more shew and bustle, than essential and lasting utility; it is not, therefore, to be expected that inferior societies will escape ridicule or slander. But the reflecting and discerning, who judge not from isolated facts and circumstances, but from the general diffusion of knowledge and incitement to emulation, which they are calculated to produce, will not be rash in forming such conclusions."

Another society for promoting improvements in agriculture and rural œconomy was established in Castle-Douglas in March 1809; and consists already of about eighty members of the gentlemen and principal proprietors and farmers in the Stewartry of Kirkcudbright. On an application to the Commissioners of Supply, fifty pounds were granted by the county, in aid of private subscriptions, to form a revenue for carrying on their

plans of improvement. From the short duration of the society, and from their very limited funds, it would be unreasonable to expect that any measures of great importance could already be carried into execution.

The intentions of all these societies, doubtless, are patriotic; the means they possess of diffusing knowledge and stimulating to exertion are not inconsiderable. Few measures seem better calculated for removing such obstacles to improvement as arise from ignorance, prejudice, or mistaken opinions in rural œconomy—for encouraging industry, promoting comfort, and repressing insubordination among the lower orders—for concerting betwixt landlords and tenants such plans as are for their mutual interest—for ascertaining by experiments the importance of new discoveries, or giving general publicity to such as are known to be important—for encouraging, by premiums, improvements in the breed of cattle, and in the implements and operations of husbandry, or the more extensive cultivation of green crops, artificial grasses, and laying out land in the best condition—and finally for rewarding merit, either in the higher or lower classes by honorary distinctions, or by pecuniary recompence. The good effects of the Highland Society have not been confined to that district, but have extended to every part of Scotland; and perhaps have even far surpassed the expectations of its founders. The Board of Agriculture, taking in a still wider range, may be regarded as the grand organ for communicating whatever is rational in theory, or useful in practice, to all the parts of the united kingdom. Though the influence of other societies must be in a great measure local, yet when under similar regulations, and actuated by the same liberal principles, their advantages may, and in most cases, doubtless,

doubtless are, not less real and essential, within the narrow limits to which they are confined. It would be uncandid to suppose that, in any case, such societies degenerate into meetings merely for the purpose of convivial entertainment.

SECT. IV.—PRICES.

The inferior prices of most of the articles of agricultural produce in Galloway, when compared with other districts, is often stated as an obstacle to improvement. The small consumption in the country, and the great distance of the markets to which both grain and cattle must be conveyed, seem to justify the observation. Sixpence on each bushel of grain; twenty, thirty, or forty shillings on each bullock, being the ordinary expence of conveyance, must be considered as a very serious diminution of the farmer's profits. But the same thing applies to most of the districts in Scotland, except such as are in the immediate vicinity of large towns. If the prices of grain are, as has been stated, nearly 10 per cent lower than in the eastern districts of Scotland, or than the average prices of the different counties of England, it ought to be taken into the account, that the quality of the grain is also inferior; a circumstance, which by good management, may in part be obviated. And in making the comparison, it deserves to be noticed, that from the great number of convenient sea ports in Galloway, few districts are less subjected to expensive inland carriage.

SECT. V.—LEASES.

Among the measures calculated to promote the improvement of every unimproved, or partially improved district, none appear to be so efficacious as proper terms of leases, and mutual confidence betwixt landlords and tenants. The ordinary period of leases in Galloway, as has been mentioned, is nineteen or twenty-one years, and to this is sometimes superadded the life of the possessor. This is a degree of liberality on the part of proprietors seldom exceeded in any part of the kingdom; and certainly affords a proper stimulus to the best exertions of tenants. It is however to be regretted, that the practice of granting such long leases is now less prevalent than formerly. These are frequently limited to fifteen, twelve, or ten years; which on farms very partially improved, cannot fail to obstruct the progress of good husbandry. But what is of still worse consequence, good arable farms, susceptible of much improvement, are often let from year to year, as grass parks, for the accommodation and encouragement of jobbers, with whom the country is already overstocked. As these, from their knowledge of markets, and superior skill and address, have commonly the advantage of other graziers in purchasing or disposing of stock, it is obvious, that on leases of such short duration, they can always afford to pay a higher rent. Hence, granting such tenures is to promote trafficking in cattle, rather than

than breeding and rearing them; which, to say nothing of the encouragement given to idleness and profligacy, is a sufficient reason to condemn the practice even in grazing farms.

But the evil is of still greater magnitude, in unimproved, or partially improved, arable farms. When leases are of very short duration, it is impossible to carry on any thing approaching to a good system of management. The most intelligent and enterprizing tenants, will not attempt improvements for which they can expect no adequate remuneration in the course of their lease, when they know that at the expiration of it, they shall have no preference on account of their previous exertions. And this must always be the case, if lands are either let by public auction, or in any other way, where no decided preference is given to the present occupier, however deserving he may be.

But on the other hand, from the continual depreciation of money, and increasing value of land, whilst no criterion can be established to determine how long these will go on, or in what ratio they will proceed, it must appear equally obvious, that the greatest difficulty occurs in settling the terms of a contract which is to determine the value of land to the proprietor, so that neither he nor the occupier may receive a material injury, if the lease shall be of very long duration. The only expedient which seems liable to no great objections, is to make the rent of the land always correspond to an adequate proportion of its real produce. If the disposeable produce of the farm consist chiefly in grain, let the rent be paid in grain, if it consist chiefly in sheep

sheep or black cattle, let it be paid from these articles; not, however, by the *ipsa corpora*, which would be extremely inconvenient for both parties, but according to the money price which the specified quantity will bring, at the respective terms of payment, during the currency of the lease. The price of grain may be ascertained by the fiars of the county, and that of cattle by the price of butcher meat at the nearest market town, or at Smithfield market, as agreed upon in contracting for the lease. In Galloway, rents were formerly very often made payable in victual. The inconvenience arising from paying them in kind, was, perhaps, the chief cause of abolishing this equitable mode of payment.

Very few instances occur where the practice of paying any part of the rent in grain has been revived. None, perhaps, are to be found, either in the present, or in former times, where rents were regulated by the price of butcher meat; though this appears to be liable to no objections which would not also apply to the other; and in grazing farms, a long lease would undoubtedly be the most equitable mode of payment which could be adopted.

The practice of advertising farms for lease in the public journals, appears to be also gaining ground. In some cases this may be extremely proper, and in all cases defensible on the principles which usually regulate commercial transactions. As a general practice, however, it has certainly a tendency to weaken that mutual confidence and good understanding betwixt landlords and tenants, on which social order and good morals

rals, as well as the improvement of the country, so much depend. Where the tenant has enjoyed long possession, and never by his conduct forfeited a just title to his master's regard; it must be repugnant to the dictates of a generous mind, to wound his feelings with the painful idea, that a stranger, a rival, perhaps an enemy, shall enjoy the fruit of his improvements, supplant him in the favour of his master, and occasion his removal, from a residence made dear to him by long habit, and a thousand tender recollections. But, on the other hand, it is unjust to complain, as the occupiers of land too often do, if the rent of a farm, like the price of any other commodity, be regulated by what it will bring in the market; and it is still more unreasonable, when by bad management or rapacity, they have abused their farms, to murmur, because the landlords transfer them to tenants in whom they have greater confidence, and from whom they will receive a higher rent. Admitting that on some occasions tenants may have reason to complain of too great an advance of rent; they must be sensible, if they reflect at all, that it is to themselves, and not to the proprietors, that the blame ought to attach. In every question of *meum* and *tuum*, a difference of opinion almost unavoidably exists: What the tenant may think too much to give, the landlord will very naturally think little enough to receive; but when he is importuned for a lease of his farm, on terms still higher than those which have been profered by the present occupier, and by persons whose practical skill is greater than his own; it cannot, surely, be imagined, that he will think his demands exorbitant. And it would be to expect, from the proprietors of land, a degree of liberality, which is not to be found in the other orders of

of the community, to suppose that from the mere circumstance of occupancy, they would be induced to abate much of what they believe to be its real value.

It is usual for proprietors to insert in leases such restrictive clauses as are calculated to prevent the bad management of farms. These are often judicious, and in the present state of agriculture evidently necessary; but it is no wonder if the leases are very ill observed, since frequently they are not even read by the tenants. A lease full of restrictive clauses and penalties, is like the book of fate, into which they dare not presume to look; or they fancy, perhaps, that it will be some apology for not observing the terms of a lease, when they have it in their power to say that they had not made themselves acquainted with them.

Leases ought to be purged of the tedious verbiage, and technical jargon of law phrases, with which they are too often cumbered. These only serve to perplex a common farmer; and indeed afford him a good pretext for not complying with the spirit, when he cannot even understand the letter of the contract.

It appears to be a good expedient, to furnish tenants with a short manual of the most approved method of conducting the different operations of husbandry, adapted to the soil and climate, and to the peculiar management prescribed by the lease. An attempt of this kind was made by the Dumfries Agricultural Society, which, perhaps, contributed in some degree, to the early advancement of good husbandry in that neighbourhood.

The

The state of agriculture is not yet so much improved, as to render this unnecessary in many parts of Galloway. In other arts and sciences, not more complicated, such compilations are found to be of great utility, not merely for instructing the novice, but for assisting the recollection, and guiding the practice of those who have made considerable progress in knowledge.

CONCLUSION.

CONCLUSION.

INSTEAD of adding more on the subject of improvement, it is perhaps very proper to apologise for having already advanced more than is pertinent to the undertaking. The liberty of censure, which has so often been assumed, on the plans and practices of different orders in the district, certainly demands some apology. The writer of the Survey trusts, however, that it is sufficient to say, that the nature of the work required it; and that nothing could be farther from his intentions than to indulge in unnecessary censure or asperity of invective. In delineating the present state of husbandry in Galloway, tracing its progress, and pointing out the means of its improvement, he has only complied with the instructions received from the respectable Board. To execute the task with fidelity, it appeared to him indispensible to mark what was deficient or erroneous, and to

to expose what was culpable; as well as to exhibit what was worthy of imitation, so far as this might stand connected with the various branches of agriculture and rural œconomy. If the future amelioration of the district is to be considered as the chief object of the undertaking, to rate its present improvements too high, would be a mistake still more unpardonable than to estimate them too low. Misplaced panegyric would convey the severest of all censure; and to give a flattering but false representation, would be a fault for which no merit could atone, in a work which makes any pretensions to the nature of history. Though to those who are only partially acquainted with the district, or who have not acquired very correct ideas of farming, the picture may, in some parts, appear to be a caricature; yet, to those who have had an opportunity of comparing the general state of its husbandry with that of very highly improved districts, the Reporter has no apprehensions that the colouring will appear, in any instance, to be overcharged. But candour obliges him to state, that the errors and abuses, which have been so often mentioned, are daily passing away; whilst the improvements carrying on, and the spirit of exertion, which becomes every day more conspicuous, justify the most sanguine expectations, that, if at any future period, another Survey should be required, it will exhibit a very different picture of the state of the country.

In his remarks, the Reporter has been guided most frequently by observations drawn from the Stewartry, where his means of knowledge have long been very extensive. His knowledge of the Shire was much more limited. The tour of a few weeks in it, all the time he could allow, he is sensible was not sufficient

to

to acquire that minute and accurate information on every interesting particular which the importance of the subject demanded. The deficiency was, however, in a great measure, supplied by the acquaintance he formed with gentlemen and farmers, whose extensive knowledge was accompanied with the most liberal and patriotic desire to promote the success of his undertaking. Whilst he regrets that he could not, in compliance with their earnest wishes, spend more time in that part of the district, he cannot, in too strong terms, acknowledge their polite attention and friendship.

Much of what has been stated, he has good reason to believe, will apply to both counties. The resemblance which has been noticed in the soil and climate, is, as might be inferred, connected with great similarity in their plans of agriculture and rural œconomy; and this, he hopes, will fully shew the expediency of comprehending the Survey of both counties in one Report, which has been the means of preventing a great deal of unnecessary repetition. Improvements appear to have begun later in the Shire than in the Stewartry, but in their progress have not been less rapid. Though good husbandry, or something approaching to it, is not so general in the former district; yet there are individuals, who, both in skill and enterprize, are not surpassed by any in the latter. In buildings, roads, and inclosures, (with some exceptions however), the Shire manifests an inferiority. The progress of improvement has been, evidently, from east to west. For some time it remained almost stationary on the banks of the Nith; but at present, farmers from that district need not blush to receive lessons from the banks of the Dee and the Cree, or

or from the vicinity of Stranraer and the Mull of Galloway.

By the bulk of readers, many of the plans of improvement which have been suggested, will, perhaps, be regarded as the visionary speculations of a pretender to reform, specious, (if they are allowed to be so called) but either useless or impracticable, otherwise they would have been more generally acted upon in an age not unenlightened, and among a people neither deficient in knowledge nor in enterprize. Fully aware of this objection, when any thing is advanced by the Reporter on his own opinion, the reasons are assigned: "Valeant "quantum valere possunt." What is advanced on the authority of others, has always been derived from sources the most respectable.

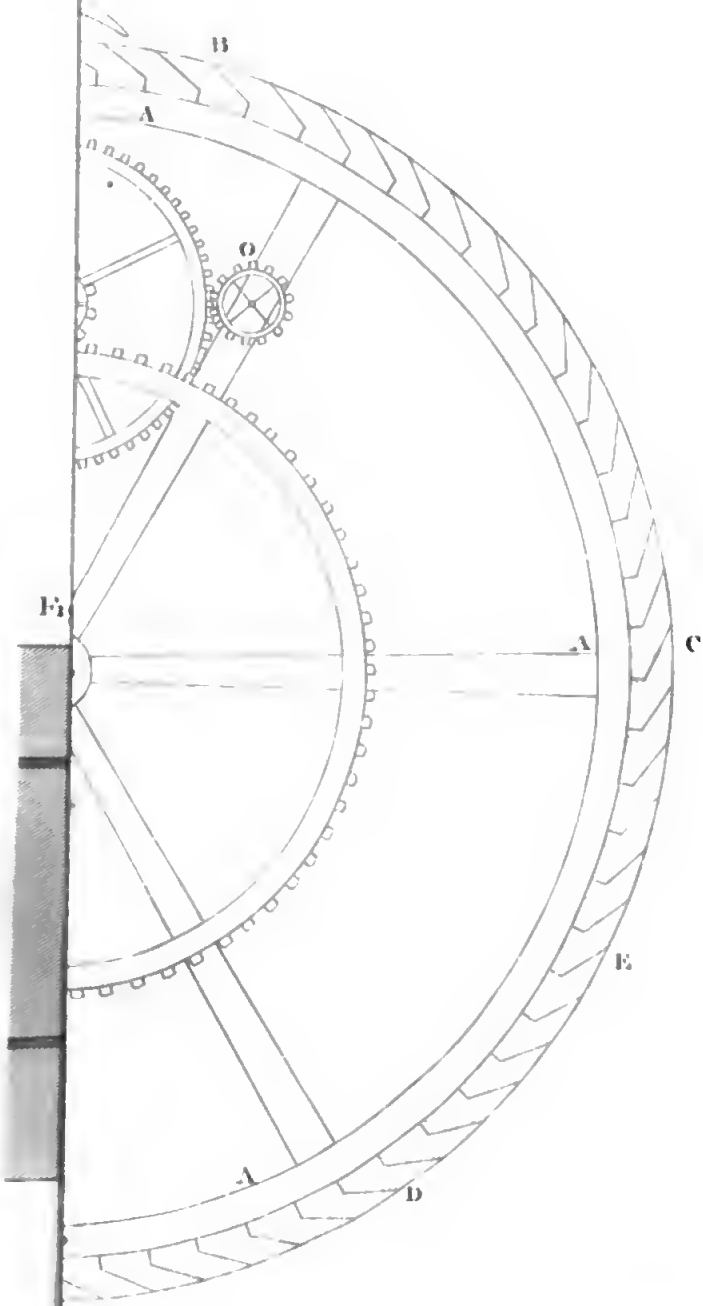
If he has been unavoidably led to condemn long established and very general practices, and sometimes to animadvert on the state of morals, or intellectual improvement, nothing, he trusts, has escaped him which will tend to convey a low idea of the yeomanry of the district. Rural improvements depend very much upon local circumstances; and among a people highly enlightened, the state of agriculture may often be comparatively rude and imperfect. Among this class of the community in every well governed country, perhaps the greatest portion of private virtue and public spirit is to be found; if the yeomanry of Great Britain stand high when compared with those of other kingdoms, the Gallovidians, it is believed, will not suffer on a comparison with those of any other district. They are placed at a happy distance from extreme poverty and great

 riches.

riches. Though far removed from barbarity, they are not sophisticated by over-refinement; possessed of independence, they are not enervated by luxury; taught the value of liberty, they have never abused it by licentiousness. Few better know how to appreciate the blessings they enjoy, in a country where the fountains of justice remain uncorrupted; where talents are distinguished; liberty protected; merit rewarded; and the fruits of industry secured.

APPENDIX.

Fig. 1



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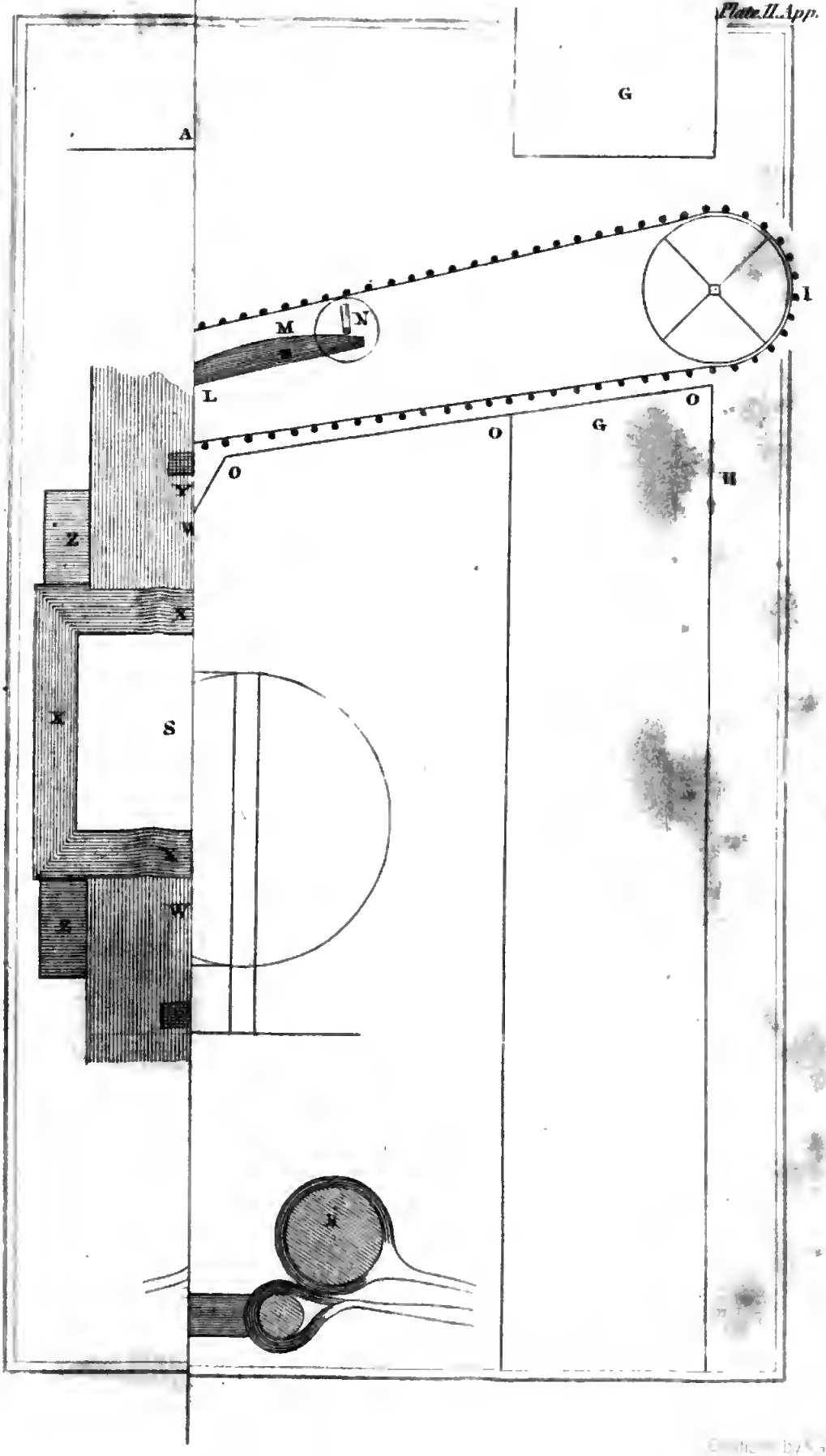

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Fig 1.

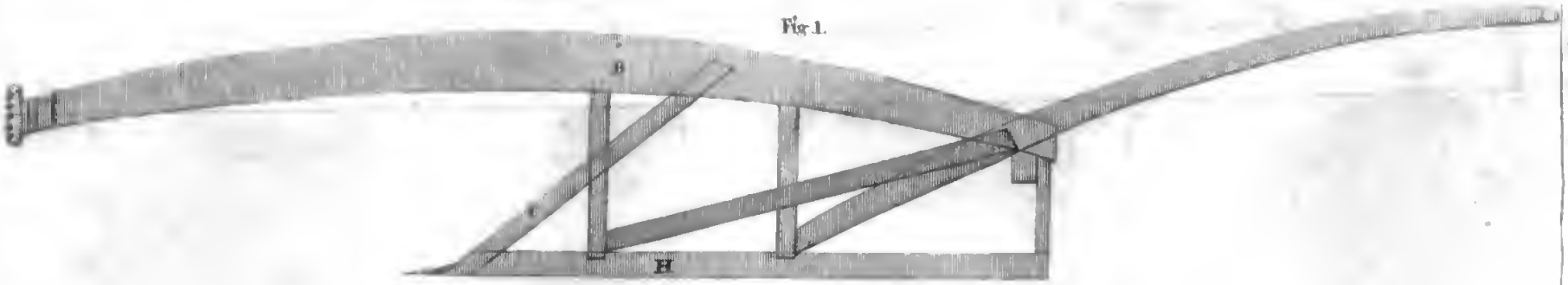

Fig.2.

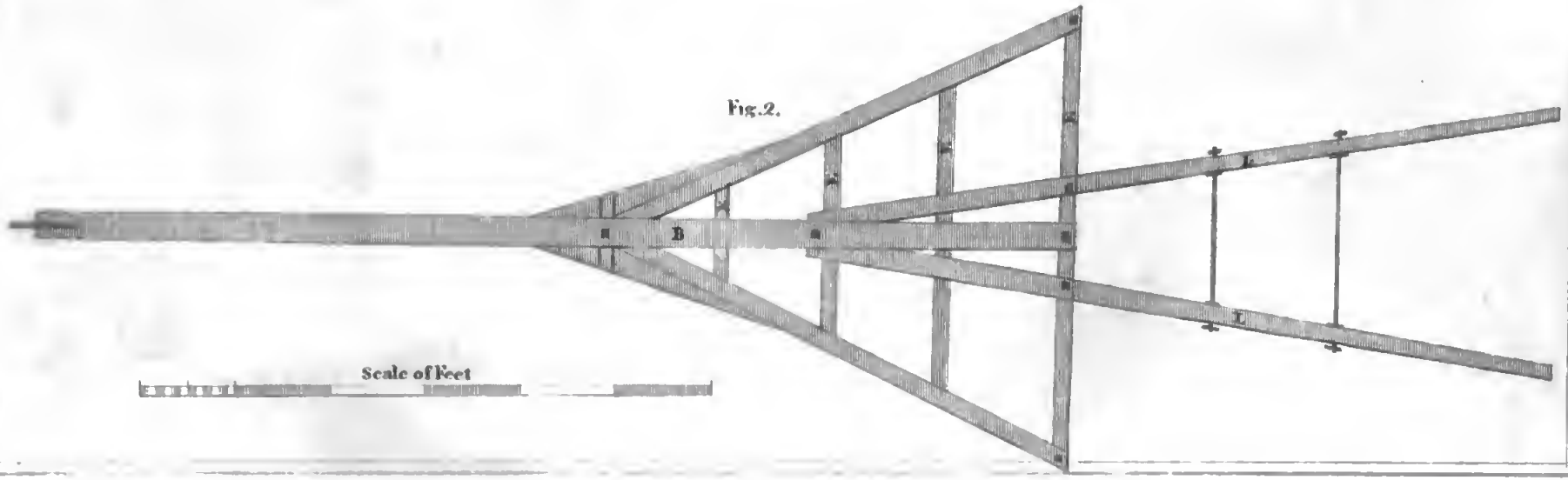

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Fig 2.

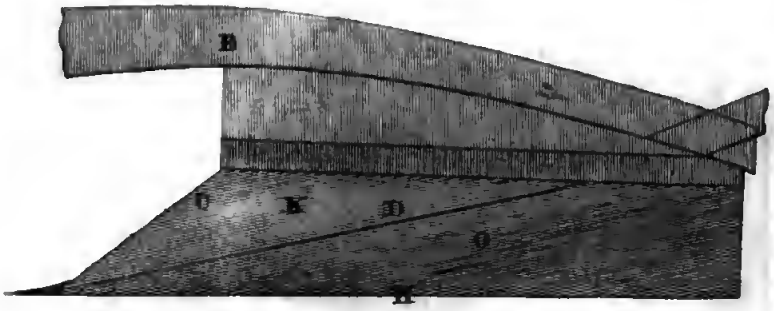

Fig. 4.

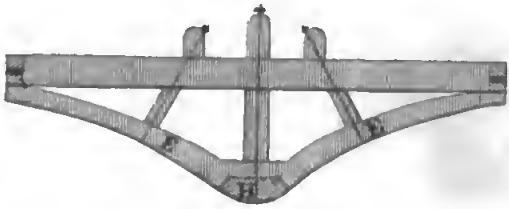

Fig. 5.

Scale of Feet.

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APPENDIX.

An Account of Mr Gladstone's *Improvement on the Thrashing Machine.*

The Reporter, sensible of his own deficiency in the knowledge of mechanics to judge of the originality or importance of the late improvements made upon the Thrashing Machine by Mr Gladstone, submitted his drawings and account of it to Professor Playfair, who has obliged him with the annexed report. To the friendly assistance of Dr Brewster, he is indebted for the following very accurate illustration of these improvements, which cannot fail to be acceptable to many readers. Sanctioned by the authority of Gentlemen whose names are so well known to the world, it is hoped that Mr Gladstone's invention may soon receive publicity adequate to its importance.

"When a high fall of water is employed as the first mover of machinery, the fluid is generally delivered into the buckets of an overshot wheel, whose diameter is nearly equal to the height of the fall. The water from the spout F (Plate I. fig. 1.) fills the buckets at B, and while a motion is communicated to the wheel in the direction B C by the weight of the fluid, the succeeding buckets are filled till nearly the semicircumference of the wheel is loaded with water. When the buckets come to the point E, they begin to lose a part of their contents, and they are completely emptied when they reach D. It is obvious that the bucket B has very little power to turn the wheel round its centre L, as it acts at the extremity of a lever equal to B M, or the distance of the bucket from a vertical line M P: in the same way the mechanical energy of each bucket in giving motion to the wheel is proportioned to its perpendicular distance from M P. If the wheel A A A, therefore, be twenty feet in diameter, the power of all the buckets, supposing them to be full even at P, will be the same as if they acted during the whole of their descent through the height of the fall, at the extremity of a constant lever twelve feet nine inches long, or about eleven feet, if we consider the arch E P where the buckets are either wholly or partly empty. The disadvantages, therefore, which attend this method of employing the weight of water to drive machinery are three: 1. The necessity of employing a wheel equal to the height of the fall, the expence of which must be enormous when the fall is about fifty feet, which is the case in a corn-mill we have seen in Colebrook dale. 2. The inefficacy of the water to turn the wheel when it is in the buckets near the vertical line M P; and 3. The loss of power arising from the discharge of the water

water out of the buckets in the lower arch E P. In addition to these disadvantages, we may state, that the wheel cannot be made to work in back water; and that when the overshot wheel is performing the greatest work, its motion is extremely slow, so that in the case of thrashing machines, where great rapidity is requisite, several intermediate wheels are necessary to give the proper velocity to the drum.

"Most of these inconveniencies have been in a great measure remedied by an ingenious contrivance of Mr John Gladstone at Castle-Douglas, who proposes to employ an inverted chain-pump in place of overshot wheels. An idea similar to this had been long ago suggested *, but it does not seem to have been carried into effect; and Mr Gladstone was certainly not aware that any such suggestion had been made.

"The machine invented by this ingenious mechanic, is represented in Fig. 2. where A A B B is a set of buckets bolted to two endless pitch chains. These chains revolve upon two shafts C, D, with studs fixed in their circumference, so that the chains seize upon the studs, and give a rotatory motion to the shafts during the descent of the buckets. The distance between the shafts being made equal to the height of the fall, the water is conveyed by the spout F into the buckets at E,

* In the Machine here alluded to, a chain of float-boards was employed instead of buckets. The float-boards moved through a vertical trough or tube, into the top of which the water was conveyed. The water, therefore, acted by its weight on the float-boards during their descent through the trough, and thus gave motion to the Machine. The disadvantages of this construction are manifest, and are all obviated in Mr Gladstone's Machine.

so that the whole buckets on one side, viz. E B B are at the same time filled with water, and at every part of their descent exert the same effort in giving a rotatory motion to the shaft C. While the chain of buckets performs only one revolution, the shaft C performs seven or eight, and hence by means of a single wheel K, a sufficient velocity may be given to the pinion M that drives the drum of the Thrashing Machine. It is obvious from the preceding description, that a considerable sum must be saved by adopting the contrivance of Mr Gladstone;—that the water in the buckets acts at the extremity of a constant lever during the whole of its descent; and that the buckets are not emptied till they reach nearly the very bottom of the fall. Besides these advantages, the Machine may be made to work in back water by taking out a few of the buckets, and raising the shaft D. The saving of expence in the construction of a Thrashing Machine, is estimated by Mr Gladstone at one-third, and in some cases at one-half.

" Fig. 3. represents two buckets on a larger scale in order to shew the method of fixing them to the chain.

" Fig. 4. represents part of a bucket and chain Q Q, in order to shew the manner of putting the links of the chain together by the bolts R R, which, passing through the links of the chain and bucket, keep the whole completely together.

" Fig. 5. is a view of the flat side of the chain, where S S are the holes which lay hold of the studs T (fig. 2.) and W W the holes for the bolts. The edge view of a flat link is shewn at V."

Report,

Report by Professor Playfair.

"I have read over the description of the application of chain buckets to work a thrashing machine, in a letter from Mr John Gladstone to the Reverend Mr Smith, and have examined the drawing that accompanies it. The application of the chain bucket to the thrashing machine, is, to the best of my knowledge, new; and, indeed, I do not know that it has been yet made to any other machine whatsoever.

"The advantage in the chain bucket of allowing all the fall nearly to be used, which cannot be done in the overshot wheel, where, for the reason assigned by Mr Gladstone, the buckets must not be permitted to dip deep in the water, is certainly very considerable. The great simplicity of the machine is another advantage, but I cannot say that I am satisfied that the greater leverage of the overshot wheel is compensated in the chain buckets by the circumstances to which Mr Gladstone refers. At the same time, I do readily allow, that the advantage of the long lever, which the overshot wheel employs, is very ready to be over-rated, as the whole of the water on the circumference of the wheel does not act by a lever equal to the radius of the wheel. An abatement of something more than one-third of the radius should be made on this account.

"On the whole, I am of opinion, that there is in Mr Gladstone's contrivance a considerable share of ingenuity and novelty, and that it deserves encouragement.

JOHN PLAYFAIR."

Edinburgh, 27th Feb. 1810.

Mr Gladstone says, that by adopting a plan of thrashing machines, there would have been a saving in his last three years practice of more than 500 l.; and he calculates, we think, very fairly, that the saving will be proportionally as great, in subsequent repairs, as in the original construction. It will appear obvious, from the drawings, that if buildings are to be erected over the wheel, the expence would be very much reduced. This seems, however, to be unnecessary, where the chain-buckets are employed; for they are made so portable, that two men can take them to pieces, and put them together in a short time, and with very little trouble; which will save them from the injuries of the weather; and greatly facilitate the execution of repairs. The chain buckets are adapted to all situations where water machines can be employed; but the advantage is greatest when the fall of water is great. Mr Gladstone is now constructing them for falls, varying from twenty feet, to seven and a half; and has no hesitation to adopt them in preference to the wheel, where the supply of water is copious, though the fall is not more than three or four feet; as it would only require that the buckets should be extended in length, which may be conveniently done, by attaching them to two, three, or four different chains.

The utility of this invention, does not rest merely on theory, but has received the test of experiment. About a year ago, one was erected in the parish of Balmaghie, for the very moderate sum of Sixteen pounds; which if the grain be good, thrashes from twenty to thirty bushels per hour. Mr Gladstone does not, however, calculate, that they can be made of good materials, and of sufficient strength, for so small a sum; nor does he recommend

commend the system of œconomy to be carried too far. His experience does not yet enable him to give a nearer calculation of the reduction of expences, than what has been above stated.

Mr Gladstone, in the course of the last twelve years, (the time of his residence in Galloway) has constructed about two hundred thrashing machines; of which, one half are driven by water. The cost has varied from forty, to one hundred and thirty pounds; and a few have much exceeded the largest of these sums. In November last, one was finished for the Earl of Selkirk, on a plan so complete, that the grain is separated from the straw, cleaned, measured, weighed, and deposited in the granary, and the straw, at the same time, conveyed into the straw-yard, by the machinery alone. The whole work is carried on at the rate of one bushel per minute, by four persons only; and a much greater quantity might be performed, by an additional number of hands.

Description

Description of the Travelling Shaker invented by Mr Gladstone.

A (Pl. II. fig. 1.) represents the feeding board on which the sheaf-corn is spread, B the feeding rollers, and C the end of the thrashing drum; D the end of the common rake for carrying off the straw from the harp E, and delivering it upon the upper side of the traveller at F, which carries it through an aperture in the wall G G, and discharges it at I into the straw-house H. K K K show parts of two spur-wheels, communicating motion from the rake to the *traveller;* the teeth of the wheel upon the axle of the traveller acting on the end of the lever L, which moves round the centre M. This centre is an iron rod passing through to the opposite side; the end of which is bent parallel with the lever L, and acts upon the centre of the pulley N in the same way as the lever L. The pulley N being raised by the lever L, gives a shaking motion to the traveller while passing with the straw upon it; and completely shakes out every particle of grain which may have remained after the straw had passed from the rake D and the harp E. This grain passes through the splits on both the upper and under sides of the traveller, and is carried along the inclined plane O O O into the hopper P and fanners Q.

Fig. 1. is drawn on a scale of half-an-inch to a foot, or in the proportion of 1 to 24.

Figures 2. and 3. are drawn in full size to show the form of the chain and the method of fixing the splits in it. Fig. 2. represents the end view of the splits and edge of the chain. R R R R mark the ends of the wooden splits inclosed by the hoops W W, which, with the other parts of the chain, are of iron. T T are clench nails fastening the hoops to the chain; and W W are parts which form joints connecting the square or close link, as is shewn by the flat view of the chain (fig. 3.) marked X X. Z Z Z Z, in the same figure, shew where the wooden splits pass through the hoops or iron sockets marked W X, W X in fig. 2.

The chain is commonly about one inch broad, and one-sixteenth of an inch in thickness.

Travelling shakers, invented about six or seven years ago by Mr Gladstone, are now common in Galloway; and are found a very useful appendage to the thrashing machine, as they convey the whole straw into the straw-yard, having separated the grain from it more completely than can ever be done in the common way.

From the account given, it may be inferred, that Mr Gladstone, has not only distinguished himself, by great practical skill in the construction of machinery; but that he possesses inventive powers, rarely excelled by those who have not received the benefit of a scientific education. Some of his inventions would, most probably, have entitled him to a patent from government, or to a handsome premium from some of the societies established for the encouragement of agriculture, manufactures, or the arts. For these, however, he has not applied; but, with a liberality which does

does him credit, has communicated them to the world, esteeming the praise of ingenuity, and the extension of business, in the line of his profession, a sufficient remuneration. This, we trust, however, by a generous public, will not be deemed sufficient. The immense advantage to a district, of an ingenious practical artizan for executing properly, and giving speedy and extensive circulation to any important invention, such as the thrashing machine, cannot easily be estimated. But when the artist combines strong inventive powers, with practical skill, the plans of others are seldom executed by him without receiving some improvement; and the celebrity of the artist who executes, contributes, in a very high degree, to bring the invention, if it has merit, into general use. How far this has been the case, with Mr Gladstone, we submit to the inhabitants of the district, who are interested in such improvements. His superior practical skill is well known, some of his inventions have already been of essential advantage to the interests of agriculture in Galloway, and require only publicity to ensure their being generally adopted. If, therefore, the merits of his inventions should be overlooked by others, the Gentlemen of this district, who have always manifested a laudable zeal to patronize merit, and promote public improvement, will, we have no doubt, see the propriety of bestowing upon him some public mark of their esteem.

TABLE I.

Statistical Table of Ministers Stipend, of Kirkcudbrightshire by Parishes.

Parishes.	Money Stipend.			Barley & Bear.		Oats. Meal.		Glebe in Acres.
	£	s.	d.	Ch.	Bolls.	Ch.	Bolls.	
Anwoth	73	6	8		64		64	8
Balmaclellan	83	0	0		32		32	45
Balmaghie	55	10	11		16		80	14
Borgue	92	0	0		48		48	17
Buittle	78	1	4		32		32	20
Carsfairn	71	13	4		24		40	13
Colvend	75	0	0		48		48	11
Crossmichael	66	18	0		50		64	16
Dalry	143	6	8					12
Girthon	141	10	0					22
Irongray	66	13	4		80		80	9
Kells	81	0	0		24		24	7
Kelton	88	6	8		24		24	12
Kirkbean	5	0	9		39		78	9
Kirkcudbright	87	10	0		64		32	8
Kirkgunzeon	50	0	0		40		40	11
Kirkmabreck	65	0	0		24		36	26
Kirkpat.-Durham	150	0	0					11
Lochrutton	75	0	0		24		24	12
Minnigaff	58	0	0		72		72	11
New Abbey	80	0	0		48		48	8
Orr, or Urr	88	19	9		48		48	11
Parton	58	6	8		64		64	14
Terregles	128	0	0		128			9
Troqueer	83	6	8		72		72	11
Tongland	113	0	0					10
Twynholm	71	13	4		32		32	28
Rerwick	91	13	4		48		48	12
Total	2321	17	5		1135		1120	397

TABLE II.

Statistical Table of Ministers Stipend of Wigtonshire by Parishes.

Parishes.	Money Stipend.			Barley & Bear.		Oat-Meal.		Glebe in Acres
	£	s.	d.	Ch.	Bolls.	Ch.	Bolls.	
Glasserton	41	6	8	4	0	4	0	
Inch	58	0	0	4	0	5	0	15
Kirkcolm	136	12	11	0	8	1	8	10
Kirkinner	83	0	0	4	0	4	0	9
Kirkmaiden	113	6	8	1	0	1	0	6
Kirkcowan	92	0	0			2	8	12
Leswalt	72	6	8	2	8	2	8	14
New Luce	59	14	5	2	8			
Old Luce	71	7	8	1	10½	1	10½	10
Mochrum	70	0	0	3	0	3	0	12
Penningham	48	6	8	5	0	5	0	10
Portpatrick	92	0	0			2	0	12
Sorbie	58	6	0	3	0	3	0	9½
Stranraer	41	0	0			2	4	30
Stoneykirk	75	0	0	3	0	5	0	10
Whithorn	75	0	0	3	0	3	0	10
Wigton	75	0	0	3	8	3	8	7
Total	1262	7	8	40	10½	48	14½	176½

STEWARTRY——TABLE III.

Exports of Grain, from the Port of KIRKCUDBRIGHT, for the three years preceding the 5th of January, 1809.

Years.	Wheat.	Barley.	Oats.	Oatmeal.
	Quarters.	Quarters.	Quarters.	Bolls.
1807	485¾	3,048	13,215	966
1808	630½	1,855	11,125	1,091
1809	325	1,854	4,386	1,658
Total	1441¼	6,757	28,726	3,715

Exports of Grain, from the Stewartry of KIRKCUDBRIGHT, entered at the Custom House of DUMFRIES* from the 10th of October, 1808, to the 10th of October, 1809.

Wheat,		Barley.		Oats.	Oatmeal.
Quarters.	Bushels.	Quarters.	Bushels.	Quarters.	31 tons, equal to
1,577	6	1,488	4	2,263	396 bolls.

* The District belonging to the Port of Dumfries extends nearly to the river Urr, in the Stewartry of Kirkcudbright. The ports in this river, are, however, connected with the Custom House of Kirkcudbright; and from them a very considerable quantity of grain is shipped yearly.

TABLE IV.

WIGTONSHIRE.

Export of Grain, &c. from the Port of STRANRAER, for the three years preceding 5th January, 1809.

Years.	Oatmeal, each boll 140 lbs. avoirdupois. Bolls.	Oats. Quarters.	Wheat. Quarters.	Bear. Quarters.	Rye. Quarters.
1806	3,200 $\frac{1}{2}$	12,992 $\frac{3}{8}$	159 $\frac{7}{8}$	8 $\frac{1}{4}$	7
1807	2,928	20,295 $\frac{1}{4}$	45	1,378 $\frac{3}{8}$	4
1808	3,951 $\frac{1}{2}$	16,794 $\frac{3}{8}$	196 $\frac{3}{8}$	1,286 $\frac{3}{8}$	0

TABLE V.

Exports of Grain from the Port of WIGTON, for the three years, preceding the 5th of January, 1809.

Years	Wheat. Qrs.	Wheat. Bush.	Barley. Qrs.	Barley. Bush.	Bear or Big. Qrs.	Bear or Big. Bush.	Oats. Qrs.	Oats. Bush.	Oatmeal. Tns.	Oatmeal. Cwts.	Oatmeal. Qrs.	Beans. Qrs.	Beans. Bus.
1807	269	0	2,392	6	67	0	18,627	0	47	1	3	0	0
1808	479	1	5 tons, 5 cwt. hulled 2,707				20,619	7	40	12	1	164	0
1809	446	3	4 tons, 7 cwt. hulled 2,616 2 tons hulled.				23,326	0	95	17	2	3	2

Exports of Grain, from the Port of STRANRAER, for three years, preceding the 5th of January, 1809.

Years.	Wheat. Qrs.	Wheat. Bush.	Bear. Qrs.	Bear. Bush.	Oats. Qrs.	Oats. Bush.	Oatmeal. Bolls *.	Rye. Qrs.
1807	159	7	8	2	12,992	3	3,200 ½	7
1808	45	0	1378	3	20,295	2	2,928	4
1809	196	3	1286	3	16,794	3	3,951 ½	0

* The boll of oat meal is 140 libs. avordupois—or one-sixteenth part of a ton.

N. B.—The Districts belonging to the two ports of Wigton and Stranraer, comprehend all ports, creeks and bays, from which grain is usually shipped in the Shire of Wigton; and also, a small part of Kirkcudbrightshire, extending from Carsluth, in the parish of Anwoth, to Newton-Stewart. A Customhouse is established at Portpatrick; but grain of any kind is seldom exported from it.

AB-

Abstract Produce from Stock in the Stewarts of Kirkcudbright.

	Number.	Value.		Amount.
		£.	s.	£.
Black Cattle	39,000	10	0	390,000
Sheep . .	130,000	0	15	97,500
Goats . .	1,200	0	12	720
Swine . .	5,600	3	5	12,600
Horses . .	4,220	20	0	84,400
				585,220

Abstract Produce from Stock in Wigtonshire.

	Number.	Value.		Amount.
		£.	s.	£.
Black Cattle	31,500	10	0	315,000
Sheep . .	52,500	0	15	39,375
Goats . .	200	0	12	120
Swine . .	4,700	2	5	10,570
Horses . .	2,730	20	0	54,600
				419,665

Total produce of Stock in Galloway ———— £. 1,075,385

Abstract

ABSTRACT of the AGRICULTURAL PRODUCE of the Stewartry of KIRKCUDBRIGHT, and Shire of WIGTON, drawn up from the Returns made from different Parishes in 1809.

In the Stewartry of Kirkcudbright there are,

	Acres.	Value. pr.acre		Amount.	
		£.	s.	£.	s.
In wheat	1,719	14	0	24,066	0
Barley and bear or big . .	3,241	8	0	25,928	0
Oats	24,645	6	0	147,870	0
Rye	100	8	0	800	0
Beans and pease . . .	200	6	0	1,200	0
Potatoes	4,000	9	0	36,000	0
Turnips, flax, carrots, cabbages	1,500	5	0	7,500	0
Artificial grasses . . .	5,780	4	10	26,010	0
Meadow and pasture . .	114,705	0	10	57,352	10
Moors, mosses and mountains .	195,777	0	2	19,577	14
Woodlands	6,500	1	16	11,700	0
Public gardens and nurseries .	45	20	0	900	0
Total amount of Annual Produce in the Stewartry of Kirkcudbright				£. 358.904	4
Produce from fisheries				1.000	0

N. B. The value of the Agricultural Produce is estimated at the Average Prices for the last three years in both Counties.

In Wigtonshire there are,

	Acres.	Gr. val. per ac.		Gross amount.	
		£.	s.	£.	s.
In Wheat	1,330	14	0	18,620	0
Barley and bear or big . .	3,390	8	0	27,120	0
Oats	19,300	6	0	115,800	0
Rye	80	8	0	640	0
Potatoes	3,130	9	0	28,170	0
Turnips, beans, pease, flax, carrots, cabbages, &c. .	1,890	5	9	9,450	0 0
Artificial grasses . . .	4,050	4	10	48,225	0
Moors, mosses and mountains .	77,750	0	2	7,775	0
Meadows and pasture . .	55,617	0	10	27,808	10
Natural woods and plantations .	1,118	1	16	2,012	8
				£.285,620	18
Produce from Salmon Fisheries				200	0
Ditto from Herring Fisheries supposed to be about .				100	0

N. B. The herring fishery had been for many years very unfortunate, but in 1809, appearances were more favourable.

The produce from manufactures, as has been stated in the Report, is very inconsiderable, but the amount could not be ascertained with any degree of accuracy.

Total amount of Agricultural produce, &c. in the county of Galloway . . .	L. 614,825	2
Abstract of the Rental of the Stewartry of Kirkcudbright	L. 167,125	0
Ditto of Wigtonshire	100,000	0
Rental of Galloway	L. 267,125	0

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